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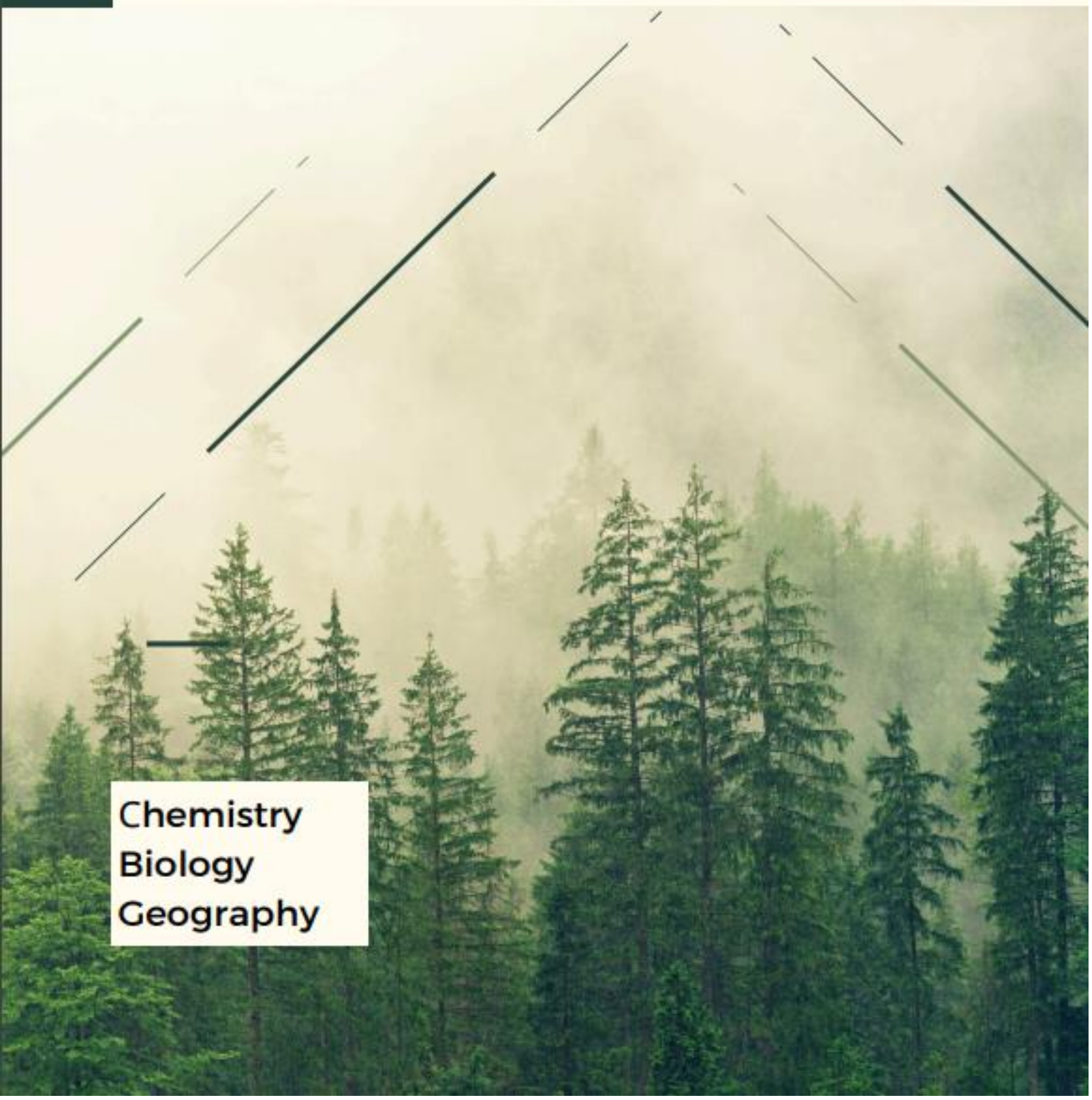

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FEATURES OF TEACHING METHODOLOGY FOR STUDENTS IN ENGLISH AND CHEMISTRY IN THE CONTEXT OF INTERDISCIPLINARY INTEGRATION

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Abstract: This article examines the features of teaching methodology for integrating English and chemistry in the context of interdisciplinary education. It explores approaches to combining linguistic and chemical training to develop students’ professional competencies and enhance their motivation for learning. The paper outlines methods and techniques that facilitate the acquisition of English terminology used in chemistry and the development of critical thinking and independent work skills. The importance of using authentic materials, project-based learning, and problem-solving approaches to achieve interdisciplinary interaction is emphasized. Practical examples of implementing the integration of chemistry and English in the educational process are provided.

Keywords:interdisciplinary integration, English language teaching, chemistry, professional competencies, terminology, project-based learning, problem-solving approach.

Modern education is increasingly characterized by the integration of knowledge from various disciplines to prepare professionals capable of addressing complex challenges in a globalized world. The importance of interdisciplinary education is especially evident in natural sciences, such as chemistry, where collaboration, research, and scientific communication often require proficiency in English. English has become the dominant language in academic and professional spheres, necessitating a focus on combining language and subject-specific training.

Integrating English language and chemistry teaching allows students to develop both linguistic and professional competencies. This approach helps students master specialized terminology, comprehend scientific texts, and communicate research results effectively. For educators, the key challenge lies in selecting and applying methodologies that balance linguistic and subject-specific instruction harmoniously.Theoretical Foundations of Interdisciplinary IntegrationInterdisciplinary education involves combining knowledge and methods from different fields to create a comprehensive understanding of the subject matter.

In the context of integrating English and chemistry, several key aspects should be considered: Linguistic Competence in Professional Contexts To effectively learn chemistry in English, students must acquire specialized vocabulary, grammatical structures typical of scientific texts, and the ability to process professional information.

Contextual Learning.Studying English through professional materials deepens understanding of both the language and the subject.

Problem-Solving Approach. Tackling real-world problems in chemistry requires the simultaneous application of language and professional knowledge, enhancing the practical relevance of the learning process.

Methodological Approaches to Integrating English and Chemistry. The successful implementation of interdisciplinary teaching depends on the use of diverse methodologies and techniques that actively engage students and achieve educational objectives. Using Authentic Materials. Authentic resources, such as scientific journal articles, experimental protocols, and English-language textbooks, develop students’ ability to work with professional information. These materials help students master terminology, improve reading and analytical skills, and adapt to the international scientific context.

Project-Based Learning. Project-based learning integrates linguistic and chemical knowledge through practical activities. For instance, students may design and present projects in English on topics such as chemical compound properties, environmental challenges, or innovations in the chemical industry.

Problem-Solving Approach. This method focuses on solving practical problems, such as identifying eco-friendly synthesis methods or analyzing new technologies. Students discuss the problem, develop solutions, and present their findings in English, fostering critical thinking and scientific communication skills.

Interactive Learning Methods. Role-playing, discussions, debates, and simulations of scientific conferences encourage active language use, communication skills development, and the ability to articulate ideas on professional topics. Integration of Digital Technologies. The use of online platforms, such as chemical databases, simulation software, and language learning applications, combines theoretical and practical education effectively.

Practical Implementation of Integration. A practical example of interdisciplinary integration is the course “Chemistry in English,” where students study the properties of chemical elements while conducting laboratory experiments. They document and present their results in English, simultaneously developing analytical skills and mastering professional terminology.Another example involves preparing presentations on current topics such as “Green Chemistry” or “Nanotechnology in

Medicine.” This approach develops research, communication, and presentation skills, preparing students for participation in the global scientific community.

The integration of English language teaching and chemistry offers an effective approach to preparing students for professional activities in a globalized world. This interdisciplinary methodology deepens knowledge in specialized disciplines while fostering the skills needed for collaboration in the international scientific community. The use of authentic materials, project-based activities, and modern technologies enhances student motivation and improves the quality of education.

References:

1. Verbitskaya, L. A., Galskova, N. D., & Efremova, L. V. (2019). Foreign Language: Modern Approaches to Higher Education. Moscow: Vysshaya Shkola.

2. Solovova, E. N. (2021). Methodology for Teaching Foreign Languages: A Basic Course of Lectures. Moscow: AST.

3. Lurie, Y. Y. (2020). English for Chemists: A Textbook for Universities. St. Petersburg: Lan.

4. Richards, J. C., & Rodgers, T. S. (2014). Approaches and Methods in Language Teaching. Cambridge: Cambridge University Press.

5. Hutchinson, T., & Waters, A. (1993). English for Specific Purposes: A Learning-Centered Approach. Cambridge: Cambridge University Press.

6. Dmitrieva, L. A. (2018). Integration of Natural Science and Language Education in University Training. Pedagogical Education in Russia, 10(6), 45–52.

7. Dudley-Evans, T., & St. John, M. J. (1998). Developments in English for Specific Purposes: A Multi-Disciplinary Approach. Cambridge: Cambridge University Press.

8. Klimenko, T. S. (2020). Using Project-Based Methods in Teaching English to Chemistry Students. Modern Problems of Science and Education, 12(3), 89–95.

9. Nation, I. S. P. (2013). Learning Vocabulary in Another Language. Cambridge: Cambridge University Press.

10. Brown, H. D. (2007). Teaching by Principles: An Interactive Approach to Language Pedagogy. New York: Pearson Education.