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Improving the Methodology of Forming Students' Biological Competencies Based on Modern Approaches in Teaching Biology (On the Example of Botany)

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Abstract: The article examines modern approaches to teaching botany in order to improve the methodology of forming students' biological competencies. Attention is paid to the principles of a competency-based approach, interactive teaching methods, technology integration, and problem-based learning. The importance of collaboration between different scientific disciplines for a deep understanding of botanical processes is discussed. It has been shown that such methods not only improve the quality of images.

Keywords: botany, biological competencies, competency-based approach, interactive methods, technologies in teaching, problem-oriented learning, interdisciplinary approach, skills development, biology teaching.

In a rapidly changing world and the development of science, education must adapt to effectively prepare students for professional activities. It is important not only to impart knowledge but also to develop competencies necessary for successful work in biology, especially in such an important field as botany. Let us consider how modern teaching approaches can contribute to improving methods for developing biological competencies in students.

1. Principles of the Competency-Based Approach

The competency-based approach suggests that education should focus on developing not only knowledge but also skills, abilities, and personal qualities. In botany, this means that students should not only study plant classification and physiology but also be able to apply this knowledge in practice, conduct research, and solve real-world problems.

2. Interactive Teaching Methods

Modern teaching methodologies emphasize active student engagement in the process. The use of interactive methods, such as group discussions, project-based learning, laboratory work, and fieldwork, allows students to gain a deeper understanding of botanical concepts. For example, developing projects to study local flora can help students apply theoretical knowledge in practice and develop critical thinking skills.

3. Integration of Technology

Modern technologies play a key role in teaching botany. The use of digital tools, such as plant databases, species identification programs, and online resources for visualizing and modeling biological processes, can significantly enrich the educational process. This enables students to access up-to-date data and participate in research at a level that would be impossible without technology.

4. Problem-Based Learning

Problem-based learning (PBL) focuses on solving real-world tasks and challenges, fostering analytical and research skills. In the context of botany, this may involve developing projects on plant conservation, studying ecosystems, or restoring biological resources. This approach not only deepens students' knowledge but also develops practical skills essential for their future professional activities.

5. Collaboration and Interdisciplinary Approach

Developing biological competencies requires collaboration across various scientific disciplines. For instance, integrating knowledge from ecology, genetics, and botany can lead to a deeper understanding of processes in the plant world. Joint projects with other disciplines can help students see connections and apply interdisciplinary approaches in their work.

Conclusion

Improving methods for developing biological competencies in students based on modern approaches to teaching botany is an important task. The use of the competency-based approach, interactive methods, technology, and problem-based learning contributes to creating a more effective and relevant educational environment. This not only enhances the quality of education but also prepares students for real-world challenges in biology, making them more competitive in the job market

Referance

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