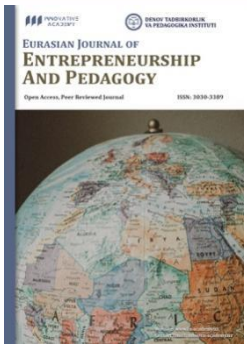

DEVELOPMENT OF DIDACTIC MATERIALS AND TASKS FOR STUDENTS IN BIOLOGY TEACHING.

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ABSTRACT

This article aims to study the process of developing didactic materials and tasks for students in teaching biology. The complexity of biology and the difficulties of students in the process of learning show the need to use innovative methods in the educational process. Didactic materials, including interactive slides, laboratory experiments, video tutorials, and game-based tasks, make it easier for students to learn biology. The article analyzes the effectiveness of didactic materials used in the teaching of biology and suggests new approaches aimed at increasing student interest.

INTRODUCTION

Biology is one of the important fields that help students understand the basic laws of natural sciences, focusing on the study of life and its important processes. However, the inherent complexity and wide scope of biology sometimes creates difficulties for students. Therefore, it is very important to develop didactic materials and assignments in the process of effective teaching of biology.

Didactic materials should activate the learning process, increase students' interest and help to consolidate knowledge. When presented together with interactive and modern pedagogical approaches, they can further increase students' interest in biology. Such materials include laboratory experiments, video tutorials, interactive games and other innovative methods.

Within the framework of this project, it is aimed to make the educational process more effective by developing didactic materials and tasks adapted to students in the teaching of biology. In this, opportunities are created for students to acquire their knowledge more deeply based on modern educational methodologies and pedagogical principles. Methodological recommendations and materials for teachers serve to bring biology education to a new level.

Literature analysis

Research and existing literature on the development of didactic materials and assignments in the teaching of biology include many important aspects. This analysis includes approaches, methodologies and practical examples aimed at improving the effectiveness of biology education.

1. Didactic materials and their importance.

In the literature, it is emphasized that didactic materials, including electronic resources, interactive presentations, laboratory manuals, and game-based tasks, play an important role in the educational process. They help students apply their knowledge, increase their interest, and better master biological concepts.

2. Innovative pedagogical approaches.

Pedagogical approaches, such as constructivism and active learning methods, are important for teaching biology. These methods provide an opportunity for students to strengthen their knowledge, solve problems and collaborate.

3. Interactive educational methods.

Interactive methods, such as group work, discussion and project-based teaching, create a favorable environment for achieving high efficiency in teaching biology. Such approaches increase communication between students and make the learning process more interesting.

4. Laboratory experiments and practice.

Laboratory work and practical training occupy a special place in the education of biological science. These experiences help put theoretical knowledge into practice and develop students' experiential learning skills.

5. Methodological characteristics of educational materials.

Didactic resources used as educational materials should be suitable for students' needs, interesting and interactive. In this process, the effectiveness of presenting materials using, for example, graphics, diagrams, and videos increases.

6. The role of teachers.

Teachers play an important role in preparing and presenting didactic materials. Their pedagogical skills and creativity directly affect the success of the educational process. Continuing professional development programs for teachers are also important.

The development of didactic materials and tasks in the teaching of biology helps to make the learning process of students more effective and interesting. Based on existing literature, it is possible to improve the quality of teaching biology by using innovative pedagogical approaches, developing interactive materials and organizing practical training.

Research methodology

This study aims to study the process of developing didactic materials and assignments for students in the teaching of biology. Research methodology consists of the following main stages:

1. The purpose and tasks of the research.

The main goal of the research is to develop effective didactic materials and assignments for students in teaching biology. For this purpose, the following tasks are defined:

- Identifying the specific aspects of biology in the teaching process.
- Determining the methodological bases necessary for the development of didactic materials and assignments.
- Analysis of innovative methods that increase students' interest and activity.

2. Object and subject of research.

- Object: the educational process of biology and its didactic materials.
- Subject: Students, teachers and specialists involved in the teaching of biology.

3. Research methods.

The following methods are used in the research:

- Literature analysis: To determine the effectiveness of didactic materials and methods in biology education by studying the available scientific and pedagogical literature.
- Questionnaires and interviews: To determine the opinions and needs of students and teachers by conducting questionnaires and interviews.
- Experimental teaching: Evaluating the effectiveness of new didactic materials and tasks by testing them.
- Analytical method: Analyzing the obtained results and drawing conclusions from them.

4. Data collection and analysis.

The data collection process includes the following steps:

- Quantitative data: Statistical analysis of students' and teachers' responses from questionnaires.

- Qualitative data: conducting a qualitative analysis based on the opinions and experiences obtained through interviews.

5. Presentation of research results

Research results are presented in the form of a scientific article, report or presentation. These materials present the knowledge gained during the development of didactic materials and tasks and are enriched with practical recommendations.

This methodology helps to deeply study the process of developing didactic materials and tasks in teaching biology and to evaluate their effectiveness. The results of the research are used to provide teachers with quality education based on innovative approaches.

Analysis and results

In order to achieve effectiveness in teaching biology, it is important to develop didactic materials and tasks suitable for students. These materials and tasks should be based on the students' level of knowledge, learning goals and the place of the topic in the curriculum. Didactic materials enrich the educational process, increase the educational motivation of students, and help to systematically strengthen knowledge.

Analysis

1. The need for didactic materials:

- Didactic materials are designed to convey complex concepts in a simple and understandable form during the teaching process. Biology, in particular, requires a visual and practical explanation of many concepts and processes. Therefore, teaching materials should not be limited to theoretical information, but should be based on visual aids and laboratory experiments.

2. Types of didactic materials:

- Visual materials: The use of diagrams, graphs, photographs and models facilitate the understanding of biological processes.
- Interactive textbooks and electronic resources: These materials provide interaction with students. For example, video lessons, animations and game assignments increase students' interest in the lesson.
- Instructions for laboratory experiments: The necessary steps for carrying out an experiment, observations and writing tasks play an important role in teaching the practical side of biology.

3. Development of tasks:

- Tasks should be multi-level, corresponding to different departments of biology.
- Knowledge testing questions: Questions should be created to test students' theoretical knowledge. These questions often provide a deeper understanding of the content of the subject.
- Practical assignments: In order for students to be able to apply the acquired knowledge in practice, assignments related to laboratory work, experiments or problem solving should be given.
- Independent research assignments: Biology develops students' independent thinking and research skills. For example, conducting research on a specific topic or preparing articles on the topic encourages students to analyze deeply.

4. Impact of didactic materials on students:

- Well-designed didactic materials and tasks deepen students' knowledge, develop logical thinking and scientific research abilities. They help not only in acquiring theoretical knowledge, but also in forming practical skills.
- Interactive and visual materials increase students' interest in science, make it easier for them to understand complex biological concepts.

Results

- Didactic materials play an important role in the process of biology education: They allow students to deliver information in a more clear and understandable form. Through visual materials, students learn the subject more deeply and can apply it in practice.
- Tailored tasks are important for strengthening knowledge: Tasks designed to test theoretical and practical knowledge strengthen students' knowledge, develop their creative and analytical thinking skills.
- Application of innovative technologies: Electronic didactic materials, interactive textbooks and online platforms enable more effective teaching of biology. Students enrich their knowledge by conducting experiments in virtual laboratories or participating in online tests.

The role of didactic materials and tasks in effective teaching of biology is great. They not only make knowledge more understandable and interesting, but also help to develop scientific thinking skills through practical exercises. Therefore, the development of didactic materials that match the curriculum and meet modern requirements increases the quality of teaching biology.

CONCLUSION

The development of didactic materials and assignments suitable for students in teaching biology increases the effectiveness of the educational process. Through visual materials, e-textbooks and laboratory work, students gain a deeper understanding of biological concepts and gain practical experience. Well-designed tasks for strengthening theoretical knowledge are important in strengthening students' knowledge and motivating them to research. The use of innovative approaches in the development of didactic materials increases students' interest in biology and activates their participation in the educational process.

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