

# Problems in the Acquisition of Genetic Knowledge in the Educational Process and Ways to Solve Them

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**Abstract:** Thesis focuses on improving the quality of education in the field of genetics in secondary schools, the development of scientific potential of students, as well as interdisciplinary interdependence in teaching students to solve problems in genetics in our colleagues who teach biology in schools. There are some problems that make it difficult for students to acquire genetic knowledge in the educational process and suggestions for their solution.

**Keywords:** Genetic knowledge acquisition, educational effectiveness, professional skills, methodological approach, activating didactic ability, increasing student activity, maximum, minimum and maximum level abilities.

Today, the study of solving problems in the field of genetics of biology and their strengthening in the process of independent learning is one of the most important and complex processes of biological education. Because any perfect theoretical knowledge acquired requires its practical application. If students are not able to apply their theoretical knowledge in practice and ensure their scientific independence, the acquired knowledge does not meet the required level. Therefore, not only scientific potential but also practical skills are required from students in the acquisition of genetic knowledge and problem solving in the educational process. Teaching biology teachers to use these two processes together requires a great deal of scientific skill and knowledge. Today, teachers face many challenges in imparting genetic knowledge and its full understanding by students. There are two main reasons for this:

1. Lack of professional skills of teachers
2. Lack or absence of a methodological approach to each topic in the transmission of genetic knowledge in the educational process. The professionalism of teachers includes not only the level of knowledge of the teacher, but also the ability to approach each student individually and assess his skills and talents. In this case, the teacher can study in the course of the lesson, dividing students into three groups. That is:
  - a) Students with the maximum level of mastery: such students have a greater scientific potential than other students, they are able to quickly absorb the information received and apply it in practice.
  - b) Students with optimal or intermediate level of mastery: such students should be well explained the scientific data and given additional tasks to strengthen their theoretical knowledge.
  - c) Students with a minimum level of mastery: when working with students of this level, the teacher should work with them more individually, taking into account both their social and scientific potential, and in addition. They should be instructed and constantly monitored.

In the process of learning, the teacher was required to acquire methodological skills in the acquisition of genetic knowledge and the organization of independent work. In this case, the teacher selects in the process of explaining genetic terms and scientific concepts to students as an

interrelated learning process at each stage of the lesson, ie in the introductory part, in the process of explaining a new topic, students' cognitive activity. It should be used in the process of organizing and managing, monitoring and evaluating the acquired knowledge and analyzing the general results obtained during the course, the acquisition of additional information and the organization of independent learning.

It is also important to manage the learning activity of students in the process of imparting genetic knowledge and forming concepts in the educational process in educational institutions. In this case, we can use the following methods:

1. Development of activating didactic ability and formation of investigative ability.

- Novelty - interesting information and facts about the genetic object or subject under study in accordance with the educational material, video tutorials or audio information enriched with historical information.

- The process of semianization - the creation of the meaning and lexical form and principle of the first mastered genetic bases created in it.

- Understanding the importance of knowledge in the national economy and aesthetics, based on theoretical data.

2. Ways to increase the activity of students at the stage of mastering the studied materials.

- Everest method - in which students are asked a difficult question in the field of genetics, depending on the level of mastery, and the existing debate is resolved by a simple answer.

- Discussion style - through the discussion of controversial questions, students develop the ability to prove and justify their opinions.

In conclusion, it should be noted that the content of the development of students' thinking through the formation of concepts in the field of genetics is as follows:

1. Independently use ideas to change new knowledge and apply it in practice.

2. Development of cognitive abilities (ie the acquisition of integrated research methods in mathematics and biology and the ability to apply them to new problems.) As a result, along with the ability to think logically, students also develop the ability to think independently. They can also apply the theoretical and practical knowledge acquired in the educational process. This is the most important basis of the problem-solving process.

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