



Ways To Activate The Cognitive Activity Of Students In The Process Of Teaching "Genetics" Using The Case Method

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ABSTRACT

This article discusses the use of modern pedagogical methods on the example of the "Case Study" method to increase the effectiveness of teaching the subject of Genetics. The use of cases makes the learning process interesting, multifaceted, creative, increasing motivation, the quality of education, interest in the subject, the ability to work independently, analyze, reason, draw the right conclusions when studying the topics of the discipline of Genetics.

Keywords:

Genetics, case study, method, knowledge, educational process, problem-based learning, complementary, situation, genes;

Introduction

Genetics is rightfully considered one of the most interesting and important areas of biology, which requires a lot of time and effort to study. When studying this discipline to develop knowledge, skills and abilities in the subject, students perform interesting and non-standard tasks that contribute to their professional self-improvement. From the point of view of a competency-based approach to higher education, one of the goals of applying innovative pedagogical technologies in the process of teaching students is the development of the student's personality, his ability to self-development, self-determination and self-education, i.e., the formation of key competencies.[1] Teachers consider the practice of modeling, designing, using active and interactive forms of work with students, various options for seminars, trainings and introducing their elements into practical classes as innovative approaches in the educational process.

Methods

An effective method of teaching students can be called the case study method or the method of teaching specific situations. Case method (casestudy) (from the English case - case) is a teaching technique that uses a description of real situations. Students must analyze the situation, understand the essence of the problems, propose possible solutions and choose the best of them. With this method of teaching, the student is independently forced to make decisions and justify it. [2] The leading role in the dissemination of this method of learning belongs to Harvard. It was there that the first case studies were developed for teaching students in business disciplines. The case study method, as defined by its developers, is a teaching method in which students and teachers participate in a direct discussion of business situations or tasks. Cases, usually prepared in writing and based on real facts, are read, studied and discussed by students. Case studies form the basis of a teacher-led audience conversation.[3] Therefore, the case study method includes both a special type of educational material and

special ways of using this material in the educational process.

Results

The result of working with the case is the development of new information, the method of data collection, the creation of a new approach to learning, the increase in the level of professional competence of students, the development of the method of analysis (problem analysis), the ability to work with text, the correlation of theoretical and practical knowledge. The main task: the formation of motivation for joint activities, the manifestation of participants' initiatives for this 1) the text is distributed to students; 2) the main problem underlying the case is determined; 3) organization of joint activities. When using the case method, it is better not to give marks according to the point system - it is enough to note the degree of student participation in the work. To identify the level of preparedness of each student, in addition to the case, a testing method is used upon completion of the study of the topic.[4]

The case method allows you to activate various theoretical knowledge on a particular course, the practical experience of students, their ability to express their thoughts, ideas, suggestions, the ability to listen to an alternative point of view, and express their own reasoned. With the help of this method, students and trainees have the opportunity to demonstrate and improve their analytical and evaluative skills, learn how to work in a team, and apply theoretical material in practice.[5] The use of this method is also necessary because it allows you to see the ambiguity of solving problems in real life. The teacher also has his own benefit when using this method: by correctly directing the discussion, he can lead to a new solution to the problem, see previously missed opportunities and facets of the situation under consideration. The development and teaching of case studies is an incredibly difficult task that requires high professionalism, pedagogical skills and erudition. A particular difficulty in teaching by the case study method is the very selection of

specific situations. Sometimes an almost ready-made situation can be taken from the media.

Discussion

The experience of using the case study method in the practice of adult education has shown its high efficiency for: developing skills in structuring information and identifying problems; training in technologies for the development of managerial decisions; updating and critical evaluation of the accumulated experience in decision-making practice; development of effective communications in the process of collective search and justification of the solution; organizing the search for an effective solution; stimulating innovation through the development of systemic, conceptual knowledge.[6] The essence of the method lies in the fact that the listeners are offered a ready-made situation, which, to one degree or another, imitates a real, life situation. Most often, it is written in the form of a finished "story", with the finale left "open". As a learning task, participants are asked to analyze it and propose their solution. The Case Study method contributes to the development of the ability to analyze situations. Consider a case on the topic: Complementary action of genes[7]

Case description: Non-allelic genes are genes located in different regions (loci) of chromosomes and encoding different proteins. Non-allelic genes can interact with each other when one trait is manifested under the action of a combination of several genes. Complementary (additional) action of genes is a type of interaction of non-allelic genes, the dominant alleles of which, when combined in the genotype, cause a new phenotypic manifestation of traits. When crossing pumpkins that have a rounded shape in the first hybrid generation F1, all fruits will have a disc-shaped shape, and splitting will occur in the F2 generation.[8]

Case questions: 1) Why is there such a change in the shape of the fetus in the F1 generation? 2) Does such a phenomenon correspond to G. Mendel's laws? 3) Why does splitting occur in the F2 generation? 4) What is the ratio in the F2 generation? 5) What ratio of

organisms by phenotype is suitable? Recommendations for students when solving a case: 1. Carefully study the educational material of the given sources. 2. Determine the factors contributing to the influence on the manifestation of the trait 3. Select the main factors influencing the shape of the pumpkin fruit? 4. Using the studied material, give your options for solving the case. Case questions: 1) Why is there such a change in the shape of the fetus in the F1 generation? 2) Does such a phenomenon correspond to G. Mendel's laws? 3) Why does splitting occur in the F2 generation? 4) What is the ratio in the F2 generation? 5) What ratio of organisms by phenotype is suitable? Recommendations for students when solving a case: 1. Carefully study the educational material of the given sources. 2. Determine the factors contributing to the influence on the manifestation of the trait 3. Select the main factors influencing the shape of the pumpkin fruit? 4. Using the studied material, give your options for solving the case.

Case solving process: Students study the educational material of the given sources, identify the factors that ensure the inheritance of traits, determine the genes involved in this process, develop their own options for solving the case, discuss their options with other members of small groups and form the final solution.[9] Case solution: 1. Parents are homozygous, since the first generation is uniform. 1.2. The first generation is double heterozygotes, since in the second generation there is a split into 16 variants. 1.3. Pumpkins with A_B_ genotypes have a disk-like shape, and elongated ones with aavb genotypes. 1.4. Individuals with genotypes A_vv and aaB_ have a rounded fruit shape. 1.5. Parents have genotypes AABB and AAbb.

Conclusion

Thus, the use of a case study in the study of the discipline "Genetics" allows attracting additional sources of knowledge, structuring and synthesizing the available information, etc. make it possible to visually see how different models of decision making are formed within the same initial information conditions; problem detection technologies. It is helpful for

students to know that there are different approaches to choose from; analysis of the sequence of facts, the content of the problem; analysis of the subjects of the situation, determining their place in the organization, interaction schemes, areas of interest, comparison with facts confirming or refuting the conclusions drawn; description of the situation as an integral system.

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