ANALYSIS OF PEDAGOGICAL TERMS THAT INFLUENCE ON EFFICIENCY OF STUDY OF GENETICS IN HIGH AND SECONDARY SCHOOL

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Abstract

Research of conformities to the law of perception and understanding of separate sections of genetics is conducted by the students of the second course of faculty of technology of production and processing of products of stock-raising of OKR Bachelor of the National University of Life and Environmental Sciences of Ukraine and by the students of Scientifically natural lyceum №145 cities of Kyiv. A chromosomal theory and population genetics, and also separate sections of molecular genetics, appeared the most difficult themes. Students marked efficiency of accompaniment of lectures sliding seats and educational films. First among the factors of priorities, which influence on the study of discipline, there were teaching quality and personality of teacher, maintenance of discipline took the third place.

Key words: Teaching of genetics, pedagogical terms, factors, efficiency of tasks.

АНАЛИЗ ПЕДАГОГИЧЕСКИХ УСЛОВИЙ, ВЛИЯЮЩИХ НА ЭФФЕКТИВНОСТЬ ИЗУЧЕНИЯ ГЕНЕТИКИ В ВЫСШЕЙ И СРЕДНЕЙ ШКОЛЕ

Аннотация

Проведено исследование закономерностей восприятия и понимания отдельных разделов генетики студентами второго курса факультета технологии производства и переработки продукции животноводства ОКУ Бакалавр Национального университета биоресурсов и природопользования Украины и учениками Научно-естественного лицея №145 города Киева. Самыми сложными темами оказались хромосомная теория и популяционная генетика, а также отдельные разделы молекулярной генетики. Студенты отметили эффективность сопровождения лекций слайдами и учебными фильмами. Первыми среди приоритетных факторов, влияющих на изучение дисциплины, были качество преподавания и личность преподавателя, содержание дисциплины заняло третье место.

Ключевые слова: Преподавание генетики, педагогические условия, факторы, эффективность заданий.

In the opinion of many modern scientists exactly genetics there is a core of the biological science. The Knowledge with geneticists allows understanding all variety of the biological forms on the land, mutation, evolution, selection processes; regulation of expression gene at a rate of organism; the development of many pathological processes. The Genetics as scholastic discipline in high educational establishments forms the biological culture and can get over discrete thinking in sphere of the biological sciences [1]. From the point of the teaching and understanding student and pupils of senior classes, genetics is considered as one of the most complex discipline. The difficulties create the following particularities of the process of studying geneticists: a lot of new terms and
Students, studying genetics at university, come with knowledge and skills of the difference level; this is conditioned presence as specialized schools-lyceum with biological direction, biological classes, and schools, in which preparation with genetics is worse in connection with low level of the teacher qualification. The situation becomes complicated in connection with reduction amount of hours, chosen on teaching given discipline, quick accumulation of the new knowledge in the field of genetics, making the new sciences on its base (genomics, molecular biotechnology, bioinformatics and others.). Transition into Bologna system of education enabled to conduct the deeper study of genetics in magistracy, but complicated study genetics for bachelor. The teacher has to donate some subjects of the general course or depth of the presenting the material. Thereby, it becomes necessary to searching for new didactic approach in teaching genetics.

The purpose of our work was a study of the regularities of the perception and understanding the separate sections of genetics by the student and pupils of senior classes for development of the new strategy in teaching given discipline.

The material and methods. The questionnaire was designed and organized anonymous questioning students of the second course of the Faculty of Animal Husbandry Output Production and Processing Technology educational qualification level bachelor, which have heard the course of lectures on genetics, as well as pupil 11 forms with biology-chemistry by direction in education. The whole was interrogated 43 students and 25 pupils.

On base of the filled questionnaires we have formed the database, which analyzed by means of standard statistical programs.

The results of the studies and their discussion. The diagram with distribution of subjects was made, which the students remember more from schools (tab. 1a). The data are evidence of those more whole students are remembered hybridological analysis, molecular and cytological bases to heredity. Three from student have not selected nor one of the sections. The population genetics, chromosome theory to heredity and coupled with figure inheritance were more difficult for student at school. These data confirm the answers on revealing the difficult sections (tab. 1b), as well as that, which students did not study at school quite. The factor of correlations between better adopted and difficult questions formed \( r = 0,69 \), but between the best adopted and that have not learned is \( r = 0,8 \). This is evidence of truthfulness of students’ answers, as well as about that when teaching genetics especial attention follows to spare the study population genetics, chromosome theory and coupled with figure inheritance.

The majority of pupils scientifically-natural lyceum with deepening study of biology, (84 %) are well remembered the hybridological analysis, 44 % - the bases of molecular heredity and only 20 % - a chromosome theory of heredity. This is evidence of that other sections are not enough methodically designed (opened in textbook, illustrated, supported of problems for independent work and others.).

The most interesting for pupils were hybridological analysis and molecular bases to heredity. Correlation analysis between interesting subjects and that were remembered has shown crowd relationship (\( r = 0,94 \)).

The most interesting for student in course of genetics were as themes that were the best remembered and were comprehensible with schools - cytological and molecular bases of

notions which are entered in each section geneticists practically; the requirements to decision of the problems, their production, understanding, extrapolations; the abstract thinking and figurative perception are so important for mastering knowledge and skill; using the statistical methods at decision of the separate problems and understanding to theories of the probable processes.
heredity, hybridological analysis, so and new - cloning, mutational inconstancy and biotechnology. The most difficult were - a chromosome theory, molecular genetics and one of the sections – the regulation of expressions gene, which needs of integrated knowledge, as cytological bases of heredity, so and molecular mechanism of the conservation, issues, and realization of hereditary information.

The Students have noted also subjects, which should to expand. Amongst these that follow to select difficult for understanding population genetics, interesting mutational inconstancy and problems, which students have selected in separate section.

The most efficient individual tasks for understanding and remembering students consider the answers at the blackboard, drawings, schemes and spoken module questioning. The pupils selected necessity of drawing, schemes and test. More efficient, in the opinion of both student, and pupils these are written checking tasks.

For the best, the students perceived the lectures with use of slide projector and scientific film. The pupils have selected also tables. More influence on efficiency of the education as a quality of the teaching and personality of the teacher, contents of discipline on the third place. The first place in priority of pupils occupied also quality of teaching, the second – personality of the teacher. The pupils also selected the quality of the teaching and personality of the teacher as more important factors at study of discipline.
A greater amount of students take more than 30 minutes of time, some of them 5 hours for preparation to laboratory works. The pupils of lyceum prepare less, 10-20 minutes, a part of pupils as a rule do nothing at home, this also shows a high efficiency of the class work at school.

The questionnaires was designed and organized with help of the teacher scientifically natural lyceum № 145 cities of Kyiv, N.I.Iastrebtsova.

**Conclusion**

1. The analysis result anonymous questioning the students of the second course and pupils of 11th classes shows that sections of genetics - a chromosome theory, molecular genetics and coupled with figure inheritance need for deeper presenting the scholastic material and new didactical and methodical guaranteeing of discipline.
2. The most effective among the individual tasks for understanding and remembering, students considered the spoken answers at the blackboard, drawings and schemes, also spoken module questioning.
3. The most important factors during the study of discipline students and pupils considered the quality of the teaching and pedagogical skills scientifically-pedagogical workers.
4. For the best, the students perceived the lectures with using of slide projector and scientific films.

So technical providing much effectively intensifies the perception of the scholastic material on genetics.

**Literature**


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