

## **Interdependenz der Faktoren der Komponenten der Methodik der Berufsberatung**

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**Zusammenfassung:** In dem Artikel wird die Wirksamkeit aller Komponenten der Methodik der Berufsberatung im Biologieunterricht für Schüler der allgemeinbildenden Sekundarstufe aufgezeigt. Der Zweck der Berufsorientierung im Biologieunterricht, der Inhalt der Wechselwirkung zwischen den Zielen des Biologieunterrichts in der Schule und den Zielen der Berufsorientierung wird hervorgehoben. Methodische Prinzipien, die die Umsetzung der Berufsorientierung im Biologieunterricht an allgemeinbildenden Sekundarschulen betreffen, und die wichtigsten Methoden für die Berufsorientierung von Biologiestudenten werden hervorgehoben.

**Schlüsselwörter:** Berufsorientierung, Allgemeinbildende Schulen, Berufsorientierung im Biologieunterricht, Ziel, Methode, Prinzip, Berufsbildung, Berufsberatung, Bildungstätigkeit.

## **Interdependence of the factors of the components of the methodology of career guidance**

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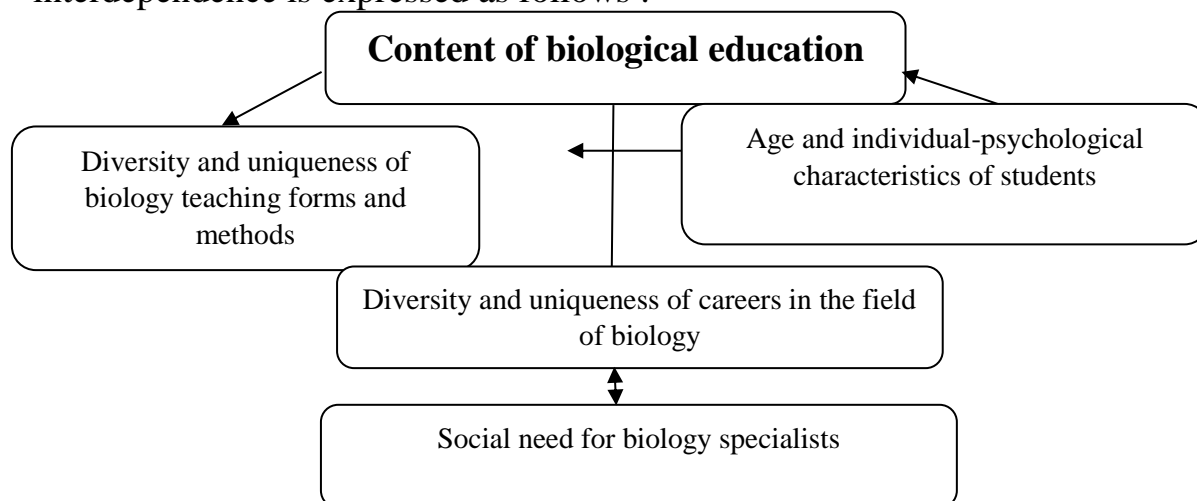
**Abstract:** In the article highlight the effectiveness of all components of the methodology of vocational guidance in teaching biology to students in general secondary schools are given. The purpose of career orientation in biology education, the content of the interaction between the goals of biology education in school and the goals of career orientation is highlighted. Methodological principles affecting the implementation of career guidance in teaching biology in general secondary schools and the main methods for career guidance of biology students are highlighted.

**Keywords:** career orientation, general secondary education schools, career orientation in teaching biology, goal, method, principle, professional education, professional counseling, educational activity.

The problem of directing students to the choice of profession in the teaching of "Biology" subjects in general secondary schools is directly related to the problem of choosing a profession and choosing an educational institution in the future. This is confirmed by the data on the emphatic experimental work conducted with high school students who need to acquire knowledge related to career guidance. Therefore, in order to enrich the practice of biology education and give students the opportunity

to consciously choose a profession, it is necessary to develop a methodology of career orientation in teaching biology in general secondary schools.

To consider career guidance methods as an ordered system, it is necessary to use a systematic approach that allows studying the object as a set of interrelated elements with integrity and stability. These factors are interrelated, and their interdependence is expressed as follows :



Since the unique feature of the T- system approach is focused on the study of the factors that ensure the object's integrity, the effectiveness of all the components of the methodology of career guidance is emphasized by the following factors include : social needs of the professional specialty of biology; the uniqueness of the content of biological science departments; diversity and uniqueness of professions in the field of biology, ecology, medicine; individual and age characteristics of students; diversity and uniqueness of forms and methods of teaching biology.

influence the formation of career orientation tasks in secondary school biology education, determining the content of work, choosing the methods used for career counseling and, as a result, ensuring its effectiveness.

In the implementation of career orientation in the teaching of biology, we do not aim to direct all students to choose biological, environmental, medical or related specialties, but it is important to encourage each student to think about a promising career, to learn how to enter the world of professions. In addition, the knowledge and skills acquired during career guidance demonstrate the practical nature of biological sciences, develop interest in biology, and therefore encourage secondary school students to acquire in-depth biological knowledge. And, finally, of course, an important result of vocational orientation in teaching biology in high school is the formation of general labor relations of students, which is manifested in the creation of a positive attitude to work.

The tasks of career guidance in teaching biology are determined based on the interaction between the goals of biology education at school and the goals of career guidance, as well as taking into account the above factors that affect the effectiveness of professional guidance. The purpose of biological education - to teach students the basic principles of biological sciences, to form a scientific vision of the world, to

understand the practical importance of biology, to form practical skills in caring for living creatures, to educate and educate an ecologically literate person [5] .

The main purpose of vocational guidance is to guide students to vocational education, to help them choose a profession by educating and learning the personality of the school student [2] . Based on the above, it is possible to determine the tasks of career orientation in the teaching of "Biology":

1. Arming schoolchildren with strong biological knowledge that will become a professional basis.

2. To introduce students to the main professions related to biology.

These tasks of directing biology to a profession related to the teaching process were determined by method biologists J.O. Tolipova, R.Kh.Djamaletdinov, N.G.Ionina [3]. However, in our opinion, to the profession orientation goals reach for tasks scope expand required:

3. To support the development of the interest of students of general education in biology as in the field of future professional activity.

4. Providing students with practical and initial professional education skills and qualifications.

5. To develop a positive attitude of students to work, to reveal the practical and social importance of professions in the field of biology.

8th grade "Biology" taking into account the content of the science , a set of knowledge about the anatomy, physiology and hygiene of the human body, as well as the basics of health care , allows students to study in depth various professions in the field of medicine (doctor, nurse, paramedic-laboratorian, etc.). And at the same time, it equips them with medical care methods that can later be used not only in everyday life, but also become elements of professional activity ( putting on tires , measuring blood pressure, mastering bandage methods, etc.).

In the 10-11th grades, the science of "Biology" at school (cytology, biochemistry, ecology, genetics, selection, etc.) as a final and integrative course that summarizes the basics of knowledge allows to direct students to professions and specialties that reflect these sciences . Examples of this include ecologist, cytologist, biochemist, medical and biophysical engineer, and cybernetics.

In addition, the content of biological education determines the forms and methods of teaching biology used in the educational process.

The age and individual psychological characteristics of high school students affect the choice of the content of school biology, the forms and methods of teaching used, and at the same time determine the depth and level of knowledge on career guidance.

The diversity and specific features of the professions in the field of biology studied in the 10-11th grade sections of " Biology " subjects, in turn, affect the choice of forms and methods of teaching biology. At the same time, a group of social factors affects the effectiveness of career guidance: society's need for certain specialists, the prestige of biological professions are interrelated with the variety and uniqueness of biological professions that should be introduced to students .

The didactic principles of education include the following principles related to the content and organizational forms of career orientation in teaching biology : the principle of the integrity of education and upbringing, according to which, in the educational process, it is necessary to provide conditions for the development of students' cognitive abilities, the formation of scientific outlook and moral foundations in them [4]. According to D.K. Ushinsky, education through teaching is at the same time developmental education and prepares a person for work in life by ensuring the development of observation, thinking, speech, memory, and imagination.

The principle of scientificity and comprehensibility of education is therefore presented to students during the study for thorough, deep mastery of modern biology and understanding of situations. The acquired scientific knowledge serves as a basis for the profession and thus helps the specialist in the process of adaptation to the future professional activity.

The principle of systematicity and consistency implies the logical and step-by-step development of biological knowledge based on the structural structure of teaching material from biology, ways of using professional knowledge in practical activities.

The principle of connection between theory and practice includes the interdependence of theoretical knowledge and practical skills in teaching biology. In implementing this principle, the methodology developed by us allows students to apply the knowledge they have acquired in their future professional activities.

The essence of the principle of awareness and activity of students is to ensure a comfortable connection between the conscious creative activity of students and pedagogical leadership in teaching. N.A. Krivolapova according to his opinion , the conscious education of students begins with the emergence of interest in tasks and the need to work in the future. One of the methods of strengthening the internal needs of students on the basis of knowledge: a reasonable study of the goals and tasks of science; to open prospects for future education of students; to acquaint students with achievements in a certain field of science; preparing them for active acceptance of new knowledge (observation and experimentation, problem solving, etc.) .

The principle of individualization in the process of organizing individual or group forms of training for students, such an approach increases the effectiveness of the educational process and develops positive personality traits. According to this principle, in the implementation of our methodology, different organizational forms are used, depending on the purpose, task and content of teaching biology in general secondary schools. These didactic principles affect the process of career guidance, because in the presented model, career guidance is implemented in the process of teaching biology.

The principle of career orientation intersects with didactic principles in many ways. These include: the principle of connecting vocational guidance with life, which means helping the student to choose a future profession in organic unity with the needs of society and professionals in this field. Based on this principle, in the development of the vocational orientation methodology for teaching biology in secondary schools, it is necessary to take into account the socio-economic

characteristics of the country's region in general, as well as analytical and forecast data on some biology-related professions.

The principle of systematicity and sequence in vocational guidance is that vocational guidance should be developed continuously in all aspects of the educational process. Therefore, interrelated components of career guidance should be included in all forms of education and in all topics of biology departments that are integrally related to educational materials.

The educational description of vocational guidance consists in the implementation of vocational guidance in accordance with the tasks of forming a well-rounded person. This principle is closely related to teacher training. Therefore, it is necessary that the methodology of career guidance should be educational in nature and form important professional personality traits in the unit of labor, economic, ecological, spiritual, aesthetic, moral and physical education.

The principle of compatibility reflects the interdependence of personal and social aspects of choosing a career that matches the interests, inclinations, personal abilities, and at the same time the requirements of the labor market.

The principle of consciousness and activity in choosing a profession is manifested in the professional self-determination of a person and active activity in the process of consciously choosing a profession based on real needs.

In addition to the above-mentioned principles of career guidance, we can distinguish the principle of connection between career guidance and training. According to him, career orientation is inseparable from teaching school subjects, because in the process of learning basic subjects, students demonstrate their professional abilities and interests in various areas of professional activity.

Among the methodological principles that influence the implementation of career orientation in the teaching of biology in general secondary schools, we include the principle of local studies. We recommend that we include not only the study of the mother nature of our country, but also the specific features of agriculture and forestry, as well as the structures of the biomedical industry, as a necessary addition to the main material of the school curriculum.

The principle of practical conditionality of biological objects and phenomena is closely related to the principle of theory and practice of didactics and the principle of connection with professional orientation in teaching the basics of science. This principle is based on the specific characteristics of school biology, which has a great practical orientation. Based on this principle, in the process of studying "Biology" subjects, students recognize the practical importance of biology and are armed with skills and abilities that can be used in future professional activities.

Based on the tasks and principles of career guidance in teaching biology in general secondary schools and taking into account the influence of factors that ensure its effectiveness, it is possible to determine the meaningful components (components) of career guidance work, in the process of their implementation, the content of the blocks is realized. We include the following:

1. Orientation of schoolchildren to the profession in the teaching of biology departments.



2. At school biology teaching in the process students professional education \_

3. School with biology to students depends occupations about professional advice to give

4. Students in the field of future biology professional adaptation to activities.

Vocational education is one of the main content components of vocational orientation of students in general secondary schools [4]. In the teaching of biology, professional education provides information about professions in the field of biology, their specific characteristics, their importance in society, the need for personnel, conditions of professional activity, requirements, psycho-physiological personal qualities specific to a particular profession, methods and ways of realizing the profession.

The content of school biology is to inform students not only about biological professions, professions whose work is nature (veterinarian, agronomist, biologist, gardener, etc.), as well as human-human types, human-technique, human-artistic image, which use biological knowledge in the process of their profession. also introduces various types of professions (biology teacher, medical professions, environmental specialists, florist-decorator, etc.). In this field, it is necessary to equip students with basic professional skills and competencies.

It should be noted that professional education should not only introduce students to the world of professions related to biology, but should develop and deepen students' knowledge and professional interests. Below we will get acquainted with the content of directing students to the profession in the teaching of biology.

The word method , in a general sense , is a method of achieving a certain goal. Teaching methods , in the literal sense , are the ways in which the teacher conveys knowledge to the minds of students, and at the same time , they are assimilated by students. In didactics, teaching methods are defined based on the following methodological and theoretical rules: the teaching method is the expression of methods of knowing objective reality in the specific pedagogical conditions of the teaching process, that is, with the help of teaching methods, students' cognitive activities are organized and controlled [5].

Teaching methods are one of the important components of the educational process. It is impossible to achieve the learning goals and tasks without appropriate methods, and to achieve the mastery of the content of a certain amount of educational material by the student.

Three main groups of methods are distinguished in directing students from biology to the profession:

methods of organization and implementation of educational activities (oral, visual and practical methods of teaching biology);

methods of motivation and stimulation of educational activities, biological games related to knowledge, educational discussions, creation of moral-emotional situations in biology classes);

methods of control and self-control of the effectiveness of educational activities (individual survey, frontal survey, oral test, written exams).

The presented methods cover the main structural elements of integrated activity (organizational, incentive and control). In them, aspects of cognitive activity such as imagination, thinking and practical application are presented as a whole.

Each method of organizing educational activities, in turn, has an information-educational and motivational effect. From this point of view, it is possible to emphasize the motivational function of these methods.

One of the unique important goals of a school teacher's work is to help students determine their life plans, create conditions for the personal development of the school student, and direct him to the profession in the process of teaching biology. This goal is achieved on the basis of a person-oriented approach to the student. The main idea of this goal is to teach students self-realization, independent thinking, and making important decisions by developing their intellectual and creative abilities and moral values.

In order to guide students in the process of biology education, it is very important to organize practical games, discussions with experts, and excursions. We will consider them in detail.

Depending on the number of participants, the following forms of vocational guidance are distinguished:

- individual, with a specific student, for example, interview, consultation, individual diagnosis;
- group, for example, lesson, game, conversation, group diagnosis, seminar, training;
- public a lot numerous students with work take to go, for example, between schools to the profession orientation events, education institutions presentations, training places fairs.

Passive forms of organization of vocational training in teaching biology. Also, passive forms of vocational guidance work (educational direction) are distinguished:

- conversations, lectures, watching video films,
- professional diagnostics, students for professional advice \_
- " profession visit to fairs to order
- " Your professional future " stands decorate \_
- students are creative works exhibitions .

Active forms of organizing vocational training in teaching biology. Active forms of professional guidance work (in the direction of training and development):

- excursions of students to higher educational institutions - organization of excursions to educational institutions will be an opportunity to see the real conditions of the educational institution chosen for study in the future, get acquainted with its history and talk with students;

- Students' participation in " Active Strength Testing" master classes (demonstrating various technical methods of working with materials, participating in games, etc. )

- use of role-playing games related to career guidance. The game allows students to "model", analyze and play real-life situations. During the participation of

students in such games, children reveal their talents, learn to express their thoughts, develop the art of public speaking, etc.

• Thematic week "The paths we choose". Competitions in the following categories can be held this week:

- presentation of professions;
- family profession genealogy;
- A selection of statements and essays on the topic "My chosen profession", etc.

Below we will touch on several topics of biology education aimed at guiding students to the profession.

Lesson training (8th grade).

### **Diseases of respiratory organs and their warning**

#### Training plan

( Subject: "Respiratory system" , 8th grade)

*Purpose* : respiratory organs study of diseases and their causes.

*Tasks* : to continue forming the concept of "infectious diseases"; provide an understanding of the threshold of infection, upper respiratory tract disease, pulmonary tuberculosis and cancer; to mention the possibility, danger and preventive measures of bacterial and viral transport, the place of fluorography in the detection of lung diseases; introduction to breathing hygiene and breathing gymnastics; to give an understanding of the living capacity of the lungs and ways to increase it; introduction to the professions of radiologist, laboratory-ecologist, sanitary doctor, pulmonologist and physician-physician.

*Teaching tools* : tables with pictures of respiratory organs, blood circulation and lymph flow, internal secretion glands; spirometer or its image.

#### *Lesson process*

##### *I Knowledge check*

The first student draws a cough reflex on the board, the second student draws a gasp reflex, and the third draws a stoppage of breath when entering cold water. Before they prepare an answer, one of the students talks about the reflex and humoral control of breathing.

##### *II Learning new material*

1 . Repetition of material about infectious diseases and immunity (for example, flu and angina).

2. Talk about lung tuberculosis and cancer. The role of fluorography in the diagnosis of these diseases. In order to guide the students to the profession, it is necessary to focus the attention of the students on the professions of doctor-pulmonologist, doctor-physician, as well as on the specialty of radiologist who detects pathology in the respiratory organs; it is necessary to emphasize the necessity of fluorographic studies, radiography, computer scans, which require knowledge not



only of biology, but also of physics, chemistry, computer science (it is also possible to listen to lectures prepared separately by students).

3. Respiratory hygiene . Determination of weather conditions. Exposure of the body to weight. In connection with atmospheric pollution, students can be introduced to the professions of laboratory-ecologist, sanitary doctor; to talk about the differences in the training of sanitary and medical doctors and the aspects of their work.

4. Measuring the vital capacity of the lungs and talking about its importance (if possible, show the measurement process).

III. *Homework*: study § 26. Answer the questions after the topic. Calculation of the living capacity of the lungs. Measure air pollution around your home.

Students who have completed this practical work will have more knowledge about the specific aspects of the work of a sanitary doctor and a laboratory ecologist. The attention of students should be focused on the psychological and psychophysiological aspects of people engaged in laboratory research : orderliness, diligence, thoroughness, conscientiousness, good eyesight.

Clean air is necessary for human health. Everyone should be in fresh air as much as possible. The air of the city is polluted with car exhaust, industrial waste, and contains a lot of dust. Dust particles irritate the respiratory tract and carry many microorganisms.

Dust easily sticks to snowflakes. Therefore, it is easy to determine the pollution of the air if a part is taken from the surface of the recently burned snow. Snow that does not touch the ground and the walls of the house is taken for analysis.

#### *Practical work*

#### **Determination of air pollution**

*Purpose* : to measure air pollution around one's home; to get acquainted with the specific aspects of the work of a sanitary doctor and a laboratory technician-ecologist.

*Equipment* : a bowl for snow , a thin glass , a newspaper.

#### *Lesson process*

1. Remove from the surface of recently burned snow, let it melt.
2. Cut a piece of the text area of the newspaper and place a thin glass cup on it. Make sure that the text can be read from the bottom of the glass.
3. Shake the container with melted snow and slowly pour the water into the glass until the text becomes illegible.
4. Measure the water column in the glass: the less water, the higher the pollution, or vice versa, the higher the water column, the cleaner the air. If it is clear and does not contain impurities, you can also take tap water for comparison.

**Consider**: Is it possible to eat "fresh snow" and wear sumacs? In many areas of the car, exhaust gases are dangerous to the body, as they may contain lead dust and other dangerous compounds. Not to mention a sore throat, which is understandable!

Forms and methods of career orientation of students used in the study of the "Biology" course are extremely diverse, and based on their choice, the ability of the science teacher to give and interest the concepts of career orientation within the scope of biology, in most cases, the academic subject, its provision with the necessary

technical tools, in the educational process it is necessary to recognize that it depends in many ways on the forms and means used.

In this sense, it is necessary to keep in mind the following directions in the organization of teaching students from biological sciences in the classroom:

1. Forming a scientific outlook.
2. To strengthen the relationship between theory and practice, to form students' abilities, skills and character traits necessary for their future professional activities.
3. Extensive use of the principle of historicity (in the lessons of the "Biology" course, students are introduced to the history of many biological discoveries in our country, CIS countries and abroad).
4. Using the principle of local studies in teaching (introducing students to natural conditions and modern achievements and prospects for the development of local industrial and agricultural enterprises, their specific working conditions, activities of various specialists, etc.).
5. Formation of socially important motivations for school students to have a constant interest in science and to consciously choose their future profession based on understanding the importance of acquired knowledge and skills.

It is recommended to use the form and methodical methods of explaining the issues of directing the students to the profession through the means of biological science, and in the formation of skills and qualifications, such as oral, visual, and connection with practice.

Information about professional fields can be used verbally; it includes events, interviews, and meetings with the participation of specialists in the same field, with a wide discussion about the results related to the demonstration of their achievements.

Acquaintance of students with professions should be carried out on the basis of the following plan:

1. The value of the profession and its place in the general production system, products, materials and production technology.
2. This profession employee by execution need has been main operations , techniques , actions .
3. Labor functions good quality perform for necessary has been common education and special knowledge .
4. Doing the job for necessary has been common work and special skill and qualifications .
5. Labor productivity in raising important have has been to the employee, the person to quality to be placed requirements; profession successful appropriation for necessary has been young and health requirements.
6. To profession preparation system; to the profession have to be ways industry qualification increases for conditions.

biology classes visual, on the basis of ICT tools work release processes describing, their whole the environment for safety reflection bringer holding demonstrations it works well. In this process tables, diagrams, graphs, stands, collections and others demonstration making , as well as video films and TV shows writing get such as technical training of means use is recommended.

Laboratory work and practical training on career guidance also play an important role in the lesson. It helps schoolchildren to acquire a number of practical and intellectual skills, to have a clear idea of animate and inanimate objects of animate and inanimate nature, what is happening in society and events.

Laboratory work and practical training on career guidance also play an important role in the lesson. It helps schoolchildren to acquire a number of practical and intellectual skills, to have a clear idea of animate and inanimate objects of animate and inanimate nature, what is happening in society and events.

Thus, during the practical and laboratory sessions of the "Biology" course, schoolchildren acquire elementary skills for determining the chemical composition of substances, acquire skills and qualifications for working with laboratory equipment, micropreparations; also, the student's interest in mastering the method of conducting elementary physiological and ecological research in the field of science increases. The students will have the opportunity to use the highlighted skills and qualifications in their work even after graduating from the educational institution.

In the same way, on the basis of practical training, the image of the professions focused on the basis of biological science should be correctly interpreted to the personality of the student. It is a reasonable task to educate, educate and train perfect people who aim to achieve high achievements in their field based on such modern educational methods and tools.

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