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Technology for the Development of Student's Science Competences Based on a Synergic Approach

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Annotation: This article provides information on the technology of developing students' science competencies based on a synergistic approach.

Keywords: synergetics, system, system, scientific competence, moral competence State policy of the Republic of Uzbekistan in the field of education, legal and regulatory documents of the organization of the educational process, professional competence and skills of the pedagogue, psychological approach to the educational process, information and communication in the educational process application of technologies, practical foreign language, innovative and synergetic approaches in teaching biology, methodology of teaching biology includes modern methods of organizing the educational process. One of the important features of the globalization process is determined by the development of students' scientific competencies based on modern educational trends

The development of students' subject competence based on a synergistic approach in education is considered one of the new directions, which implies that the student's competence is formed from self-organizing systems during his development as an intellectual person. So, the synergetic approach implies the creation of a certain system or systems during the development of students' competences related to science. In this regard, if we look at it from the point of view of scientific competence, the development of the student's knowledge level based on a synergistic approach includes the systematic and step-by-step development of the student's scientific competence.

Without knowing the structure, content and characteristics of the student's activity, it is impossible to form his subject-related competences, knowledge, skills and abilities, as well as personal qualities. Such an approach to the study of student activity is also methodologically necessary. At the current stage of development of the science of pedagogy, it is necessary to look at the student's level of knowledge and personality from the point of view of activity and personality analysis. At the same time, the systematic approach we have chosen makes it both a practical and unavoidable necessity. In our society, improving the reform of the educational system, its modernization, and the application of innovations to the educational process require a competent approach to the educational system.

Competency approach - a competent approach in education means teaching students to effectively apply various types of skills acquired in situations encountered in their personal, professional and social lives.

Professor J.O. Tolipova emphasized that it is the necessity of the present day to develop the basic competencies of students in the process of teaching subjects, including biology, included in the curriculum of higher educational institutions of pedagogy.

Education based on the competence approach is education aimed at forming students' practical application of acquired knowledge, skills and qualifications in their personal, future professional and social activities. Students continue their studies in the continuous education system after graduating from general education institutions, enter into personal, social, economic and professional relationships during their independent life, take their place in society, and solve the problems encountered in this process. solve, and most importantly, he should have the basic competencies necessary to be competitive in his field and profession.

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It is known that through the educational process, general educational institutions are responsible for developing basic competencies in students, including communication, ability to work with information, competence of self-development as a person, competence of socially active citizenship, general cultural competencies, mathematics. literacy, being aware of science and technology news, and the task of developing competences for use.

A competent approach to the educational process is a set of general principles that allow the organization of the educational process on the basis of innovative technologies and the analysis of the results of the enrichment of the educational content in order to achieve the educational goals.

They include the following:

The ability of students to solve problems based on acquired knowledge, skills and abilities in various activities and areas of independent life, based on their own life experiences, observations, personal conclusions, and the ability to smoothly perform required activities in necessary cases. development;

In choosing the content of biological education and creating methodical support, it is necessary to increase students' interests, expand their scientific worldview, solve ethical, ideological-political, ecological problems, didactically reworked the previously mastered by students. to apply their knowledge, skills and abilities in new unexpected situations, to pay attention to the fact that it will allow them to make scientific conclusions based on their life experiences and observations;, pedagogical skills, competence, ability, skill, synergetic approach.

The main goal in the organization of the biological education process is the formation of students' knowledge, skills, qualifications, as well as working with information, acquiring communicative skills, mathematical literacy, social activity, create conditions for them to gain experience in solving educational problems independently;

The results of the educational process are evaluated based on the results achieved at a certain stage of this process, i.e. the level of knowledge, skills and competences acquired by the students, which are the basis of competence;

In the competence approach - the goals of education are self-awareness by students, understanding of the ways to achieve educational goals in the educational process, activation of students' learning and learning activities, students as individuals. It is intended to aim at priorities such as adaptation to society and independent life, socialization through self-development;

In the process of competent training, it is possible to perform the following functions:

To meet the social needs of our country for young people who are able to solve the problems of society, science, production and independent life in the future;

Satisfying students' needs to learn the basics of science, developing their interests, building personal qualities;

Focusing students' knowledge, skills and abilities, creative activity experiences on specific objects and solving existing problems;

To guide students to the profession by increasing their readiness for specific practical activities, to the field of science as a result of the development of creative activity experiences;

It is possible to introduce functions such as preparing students for independent life by applying the scientific and theoretical knowledge acquired from biology in practice in concrete and processual problem situations;

Competence is divided into levels according to the methods of content acquisition and its importance in a person's life.

Competencies that prepare the ground for the general development of a student's personality are called basic competencies, and competencies that are formed only through the subject of biology are called special competencies. The analysis of the literature showed that the students' competencies are divided into three levels.

General competencies are the content of all subjects included in the curriculum of general education institutions and the competencies that are formed through the teaching process.

Special (biological) competences are the competences that are formed on the basis of knowledge, skills and qualifications in the process of biological education.

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Interdisciplinary competences are the competences that are formed by making interdisciplinary connections in the teaching of social-humanitarian, natural-mathematical and practical subjects included in the curriculum. The student's competence in biology is the ability to use the knowledge, skills and qualifications acquired in biology to solve practical and theoretical problems encountered in everyday life.

The biology teacher should analyze the content of the subject in order to develop the above-mentioned basic competencies in the students, the work carried out in all forms of teaching: lessons, extra-curricular activities, excursions and extra-curricular activities should be systematic and integrated with each other. should plan its implementation.

Professional pedagogical competencies are considered high-level scientific competencies. Its components include:

Scientific theoretical competence;
Scientific and methodical competence;
Pedagogical-psychological competence;
Professional quality and qualities (Chart 1).

Professional quality and virtues 1) creation of content of creative activity; 2) formation of values;

3) formation of spiritual and moral education; it is developed through the formation of pseudo-political educations.

Below are the components of professional competence.

Drawing 1. Components of professional competence

In addition to the competency-based approach to education, the role of systematic, innovative, informative, meaningful, modern technological approaches and the importance of using them in education for the formation and development of biological competencies in students through biology teaching will be discussed in the future plans of our topic. We found it necessary to keep it.

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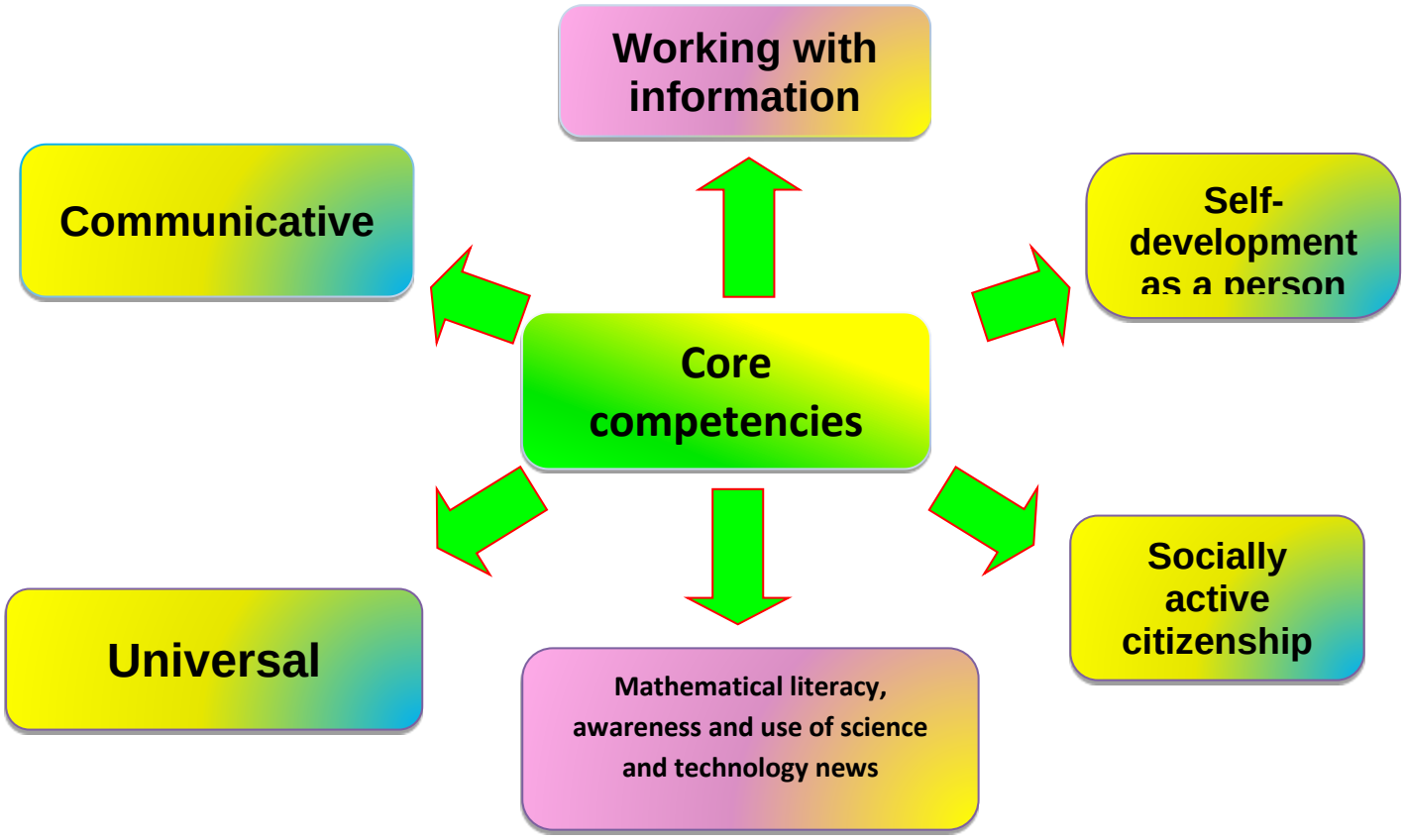

Figure 2. Core competencies

Communicative competence - mastering the mother tongue and any foreign language perfectly and being able to use it effectively in communication in order to communicate in society;

to be able to clearly and clearly express one's opinion orally and in writing, to be able to logically ask and answer questions based on the topic;

social flexibility, adherence to the culture of interaction, ability to work in team cooperation; being able to defend one's position while respecting the interlocutor's opinion in communication, being able to convince him;

being able to manage one's passions in various conflict situations, to make necessary (constructive) decisions in solving problems and disagreements;

Competency in working with information - being able to use available information sources (Internet, television, radio (audio-video recording), telephone, computer, e-mail, etc.);

to be able to find, sort, process, transmit, store, secure and use the necessary information from the media, and observe media culture in using it;

to be able to create a database, to be able to select the main ones and to be able to analyze them;

able to work with documents found in daily activities (writing simple greetings, filling out questionnaires, recording information about oneself in the hotel list, etc.)

Competence of self-development as a person: continuous self-development as a person, striving for physical, spiritual, mental and intellectual perfection;

regularly increase learning, knowledge, and experience throughout life;

to have qualities such as adequate assessment of one's own behavior, self-control, honesty, correctness;

to be able to solve the problems encountered in everyday life using what they have studied and life experience. Socially active citizenship competence. Feeling of commitment and active participation in events, events and processes happening in the society;

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to know his civil duties and rights, to comply with them (that is, to be able to act as a buyer, voter, customer, producer);

to have business, economic and legal culture in labor and civil relations;

to serve the interests of society and family with the pursuit of professional growth, to be generous to those in need

Universal competence. - to be loyal to the motherland, be kind to people and believe in universal and national values;

to be able to understand and be influenced by works of art;

dress modestly, adhere to cultural norms and a healthy lifestyle in behavior,

to know values of universal importance (customs, rituals, national-cultural traditions, etc.), to treat them with respect;

kindness, generosity towards others, respect for other people's worldview, religious beliefs, national and ethnic characteristics, traditions and rituals;

to carefully preserve the historical, spiritual and cultural heritage of the people, to observe the rules of etiquette established in the society. Being aware of and using mathematical literacy, science and technology news: being able to make personal, family, professional and economic plans based on accurate calculations;

accounting in personal, social and economic relations;

being able to read and use various formulas, models, drawings, graphs and diagrams in daily activities;

to be aware of and be able to use science and technology innovations that ease human labor, increase labor productivity, and lead to favorable conditions. Special competencies are formed using basic competencies. Based on the characteristics, goals and tasks of each subject defined in the curriculum, it is taught in the process of teaching, i.e. in educational activities - lessons, laboratories, practical lessons, extra-curricular and extra-curricular activities. During the performance of independent works recommended by the teacher, students' private competencies are ensured.

Specific competences are developed within each discipline. For this, the students should not only have knowledge within one subject, but also a number of subjects in a collective way. For example, the student was required to be able to use the scientific-theoretical knowledge he acquired from biology in his future life activities. The compatibility and mutual requirement of basic and special competencies leads to the development of real biological competencies in the student (Chart 3).

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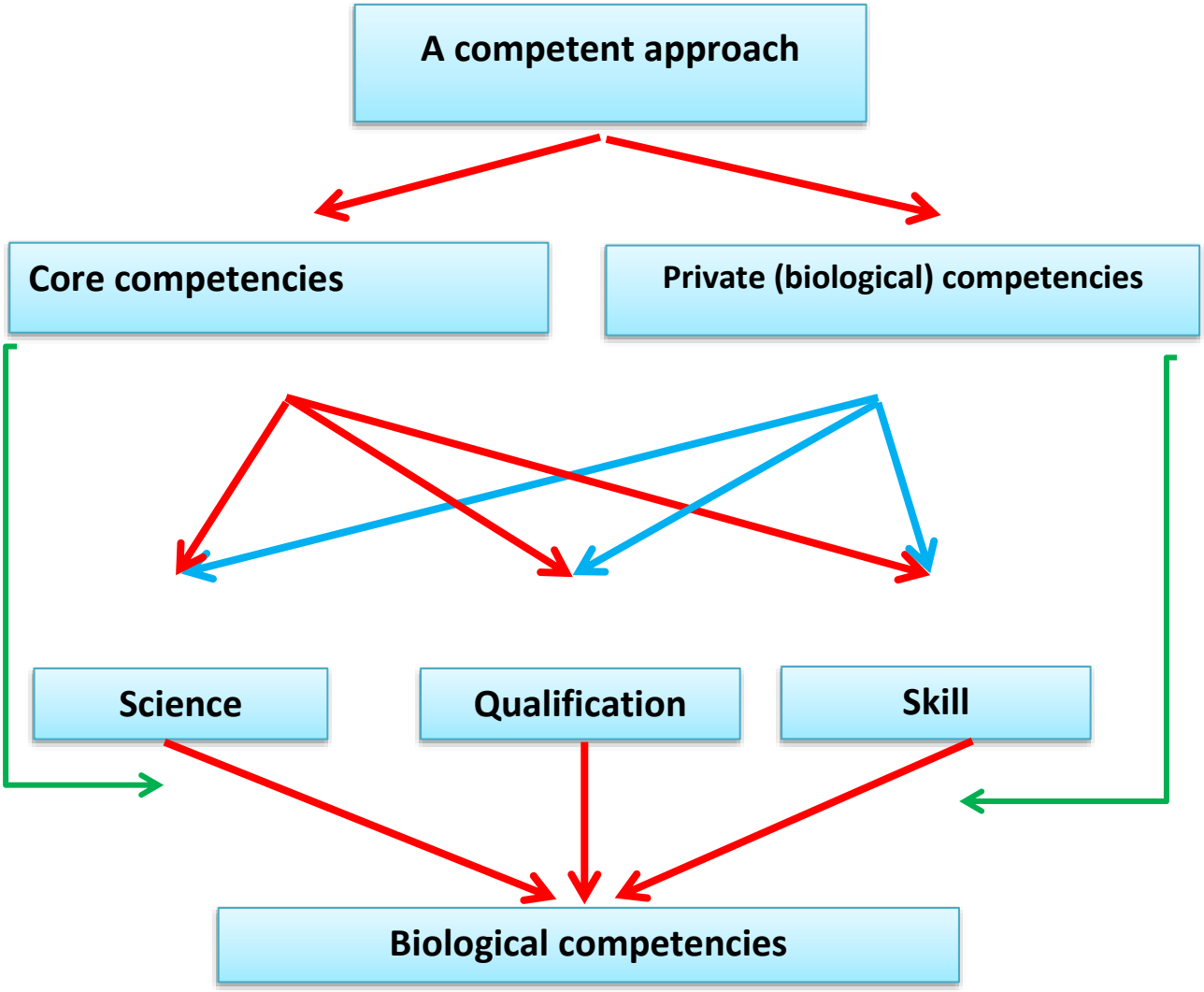

Figure 3. Formation of biological competences

In addition, in the process of mastering each academic subject in education, the appropriateness of the formation and purposefulness of the following special competencies related to biology was determined based on the uniqueness and content of this subject (according to the results of the experiment). They are listed in Table 1 as follows:

t/r	Competencies	Results
1	Acquisition of knowledge	Knowing, observing, understanding, explaining biological processes and phenomena
2	Acquisition of skills of applying biological knowledge	Being able to apply biological knowledge in life
3	Development of intellectual and creative interests in knowledge	Analysis of incidents and events, creative approach to problem solving
3	Appreciate living nature and have a positive attitude towards it	Applying the knowledge gained from biology to practice, ecological culture is formed
4	Application of abilities and acquired knowledge and skills to practice.	He is able to apply the knowledge gained from biology in practice and is directed to the profession

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In conclusion, independent development of synergistic productions in harmony by teaching biological sciences to students in private general education schools prepares the ground for students' thinking and creative search, and is based on the improvement of knowledge.

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