Integrative methods of formation of basic competencies in students
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Annotation. This article deals with methods for developing integrative core competencies in students. The competence-based approach defines the result of education as "a general integral social-personal-behavioral phenomenon in the aggregate of motivational-value, cognitive, interactive and empirical components". In the article, we can see interactive methods as discussion, heuristic conversation, "brainstorming", role-playing, "business" games, trainings, case method, project method, group work with illustrative material, discussion of videos and others. The most important interactive methods are considered from the point of view of the formation of key competencies in the study of natural sciences.

Keywords: basic competence, communicative competence method, integration, educational institution, professional knowledge.

Introduction. It is now clear that it is not enough for students to have only the knowledge, skills and competencies in the subjects. Some students who successfully graduate from an educational institution face many failures in life. Although a young specialist who has graduated from a higher education institution and gone to a new job has acquired sufficient professional knowledge and skills at a university or institute, his or her adaptation to the workplace will take a long time. At a critical moment, it becomes clear that the knowledge and skills acquired in school or high school do not correspond to life situations that need to be addressed quickly or are not needed at all in life.

Accordingly, there is a need to create and apply to the educational process State Educational Standards (SES) based on a competency-based approach that teaches students to apply the knowledge, skills and abilities acquired in the educational process directly in everyday life.
**Literature Review and Methodology.** The word “competence” is derived from the word “to compete”, which means “to compete”, “to compete”, “to compete”. Literally translated, it means “competitiveness”.

The essence of the competency approach in education in Uzbekistan is studied in the scientific works of F.M.Zakirova, R.G. Isyanov, N.A. Muslimov, A.K.Rakhimov, J.E. Usarov, Yu.Asadov, M.M.Vahobov, A.M.Magrupov and others. They have conducted research on the diagnosis and correction of approaches to the effective development of competencies, the importance of developing information competence.

According to scientific pedagogical and psychological sources, competence is a very complex, multifaceted concept that is common to many disciplines. Therefore, its interpretations are diverse in terms of both volume and content, as well as meaning and logic. The essence of the term is also described on the basis of such concepts as "efficiency", "flexibility", "success", "comprehensibility", "readability", "hocca", "feature", "quality", and "quantity".

Before exploring the content and essence of competencies, let’s get acquainted with a brief history of its entry into science and marriage.

The first stage was 1960-1970. - The introduction of the first competencies in language learning. The concept of “communicative competence” is introduced by D.Khaymes.

The second stage - 1970–1990 - began to use the categories of competence in the study of language, especially in the theory and practice of learning a second (non-native) language, management, leadership, professionalism and communication in management. At this point, the content of the concept of “social competence” is developed.

The third stage - in 1990 and subsequent years, began to be applied in the competence approach, vocational education, general education and other areas.

In accordance with the decree of the First President I.Karimov, dated December 12, 2012, aimed at improving the teaching of foreign languages, Uzbekistan for the
The first time developed State Educational Standards based on a competency-based approach and began its phased implementation in the 2013/2014 academic year.

There is a list of structural components of competence:

- Type of competence and its place in the general sequence (base, general subject, subject);
- The range of objects in which competencies are included, the actual operation;
- Socio-practical relevance and importance of competence (why is it necessary for society?);
- The importance of competence in relation to the individual (why should a student be competent?);
- Knowledge, skills and abilities in the field of real objects;
- Minimum experience required for the student to work within this competence (by stages of training);
- Indicators - examples of educational and control-assessment tasks to determine the level of student competence (by stages of training).

Basic competencies belong to the general (meta-subject) part of the educational content. General subject competencies belong to a range of subjects and areas of study. Subject competencies - are formed in the framework of the subject, which is special compared to the previous two.

Basic competencies are specified each time for a specific stage of education and a defined subject. For example, in the science of history, which is the competence of the subject, in any historical event lies the ability to distinguish the struggle of interests of different parties.

Below are the basic competencies that must be formed in the State Educational Standard of General Secondary Education, approved by the Cabinet of Ministers of the Republic of Uzbekistan dated April 6, 2017 №187.

Communicative competence means the ability to communicate in social situations in the native language and in any foreign language, to adhere the culture of communication, to develop social flexibility, the ability to work effectively in a team.
Competence in working with information means the ability to search for, sort, process, store the necessary information from media sources, to use them effectively, to ensure their security, to develop the ability to have a media culture.

Self-development competence is continuous physical, spiritual, mental, intellectual and creative development, striving for maturity, lifelong independent learning, continuous improvement of cognitive skills and life experience, alternative assessment of one's own behavior and independent involves the acquisition of decision-making skills.

Socially active civic competence means the ability to feel involved in and actively participate in events, happenings and processes in society, to know and fulfill their civic duties and rights, to have the ability to behave in labor and civil relations and to have a legal culture.

National and intercultural competence means loyalty to the motherland, kindness to people and belief in universal and national values, understanding of works of art and art, dressing in public, adherence to cultural rules and a healthy lifestyle.

Mathematical literacy is the knowledge of using scientific and technical innovations, the ability to make personal, family, professional and economic plans based on accurate calculations, to read various diagrams, drawings and models in daily activities, to facilitate human labor, increase productivity, convenience the formation of the ability to use scientific and technical innovations that lead to the conditions.

The use of integrative methods in the formation of competencies in the learning process in the student gives its effective result.

Basic competencies include communicative competence through verbal inquiry, homework, comprehension of classmates' explanations, debates, etc. finding information about situations can be shaped by explaining them. At the same time, the competence of self-development as an individual is formed.

Skills related to socially active civic competence can be developed in the organization of lessons using methods such as group work, role-playing games. The
exemplary life of scientists who have made great discoveries in the field of science for the formation of general cultural competencies in students can be realized by showing that with the development of science, the general culture of mankind rises as well.

The competency-based approach defines the result of education as "a general integral social-personal-behavioral phenomenon in the aggregate of motivational-value, cognitive, interactive and empirical components". The context of new requirements for a person in these conditions determines the need for the formation of special personality traits in education:

- The ability to solve the problems of modern life in the political, environmental, intercultural spheres;

- The ability to solve problems of the axiological sphere through orientation in the world of spiritual values, taking into account the diversity of social, cultural, ethnic, religious values and differences, forms of modern culture, as well as means and methods of intercultural communication;

- The ability to perform the necessary social and role functions of a citizen, voter, family member, parent, and others;

- Universal skills in information search and analysis;

- The ability to make decisions in cases of a multivariate situation, including in conditions of uncertainty, to be responsible for the decisions made, to work in a team and organize team activities;

- The ability to continuous education, the development of cognitive activity.

Key competencies represent the highest level in the hierarchy of competencies, since they are of a supra subject, interdisciplinary nature and are manifested in different areas. Their presence is necessary for a person throughout his life for self-
realization, productive professional activity, building relationships with others, changing occupations, and others.

Orientation to new goals of education competence requires not only changes in the content of the studied subjects, but also the methods and forms of organizing the educational process, activating the activities of students during the lesson, bringing the topics under study closer to real life and looking for ways to solve emerging problems.

The results of the study, as well as the analysis of scientific and pedagogical literature on this issue, led to the conclusion that the objective needs of society make the widespread introduction of personality-oriented developmental technologies relevant. [3] With such training, such qualities as the independence of students, responsibility for decision-making are formed and developed; cognitive, creative, communicative, personal activity of students, determining the behavioral qualities of a competent employee in the labor market and contributing to the socialization of the individual.

In the conditions of developmental education is necessary to ensure the maximum activity of the student himself in the process of forming key competencies, since the latter are formed only in the experience of their own activities. In accordance with this, many researchers associate innovations in education with interactive teaching methods, which are understood as "... all types of activities that require a creative approach to the material and provide conditions for the disclosure of each student". [4, p. 144]

Interactive ("Inter" is mutual, "act" - to act) - means to interact, is in the mode of conversation, dialogue with someone. Interactive and proactive methods have a lot in common. Unlike active methods, interactive ones are focused on broader interaction of students not only with the teacher, but also with each other and on the dominance of students' activity in the learning process (see Fig1).
In general, the interactive method can be seen as the most modern form of active methods.

Interactive methods include the following: discussion, heuristic conversation, "brainstorming", role-playing, "business" games, trainings, case method, project method, group work with illustrative material, discussion of videos, etc. Let us consider the most important, in our opinion, interactive methods from the point of view of the formation of key competencies in the study of natural science disciplines.

1. Method of projects

The project activity of students among modern pedagogical technologies, from our point of view, is the most adequate to the set goals of education - the formation of key competencies. The project method can be considered as one of the personality-oriented developmental technologies, which is based on the idea of developing students' cognitive skills, creative initiative, the ability to think independently, find and solve problems, navigate the information space, and the ability to predict and evaluate the results of one's own activities. The project method is always focused on the independent activity of students individual and pair groups, which they perform for a certain period of time. This method is applicable in the presence of a significant problem (practical, scientific, creative, life), for the solution of which a research search is required (E.S. Pulat). In order to adapt to changing life situations, including in professional activities, a graduate of an educational institution in modern conditions must have a breadth of knowledge, the ability to integrate it and apply it to explain the phenomena around him. All this confirms the need to use practical projects in project activities. Practical experience gained by students can be used to solve problems that arise in everyday life, in everyday life.
or at work. Practice-oriented tasks increase the efficiency of the educational process by increasing the motivation to master this area of knowledge, which manifests itself only in conditions that are personally significant for students. So, students of an educational school in the study of chemistry can be offered the following project topics: "Dry cleaning in our house", "Chemistry in the garden", "Food additives and human health", "Chemistry and beauty"; professional orientation: "Pharmaceutical chemistry", "Liquid crystals in modern optoelectronics", "Food processing technology", and others.

Unlike educational and research activities, the main result of which is the achievement of truth, work on a project is aimed at a comprehensive and systematic study of the problem and involves obtaining a practical result - an educational product. The product can be a video film, album, poster, newspaper article, instruction, theatrical performance, game (sports, business), website, and others. Project activities involve the preparation of reports, abstracts, research and other types of creative activities.

In the process of implementing the project, students use not only educational, but also educational, methodological, scientific, reference literature. The role of the trainer is to oversee advice and guide the process of analyzing the results if necessary. In the course of the project, the student is involved in an active cognitive creative process. In this case, both the consolidation of existing knowledge on the subject and the acquisition of new knowledge take place. In addition, supra-subject competencies are formed: research, communication, organizational and managerial, reflexive, teamwork skills and abilities, and others.

Case study

Case study is a teaching technique that uses a description of real economic, social, daily or other problem situations. When working with a case, students search, analyze additional information from various fields of knowledge, including those related to their future profession.

“Its essence lies in the fact that students are offered to comprehend a real life situation, the description of which reflects not only some practical problem, but also
actualizes a certain set of knowledge that must be learned when solving this problem. Moreover, the problem itself has no unambiguous solutions”. [5, P.10]

In the case method, a problem is formed and ways to solve it based on a package of materials (case) with a varied description of the situation from various sources: scientific, special literature, popular scientific journals such as “Science and Life”. The case contains ambiguous information on a specific issue. Such a case is both a task and a source of information for understanding the options for effective actions (Yu.P. Surmin, G.L. Bagiev, V.N. Naumov, S.M. Samarina, S.A. Kalugina). The case method in relation to other technologies can be represented as a complex system into which other, less complex methods of cognition are integrated. It includes modeling, systems analysis, problem method, thought experiment, methods of description, classification, discussions, game methods, and others. As an assignment, a student (or a group of students) can be offered to make a report, prepare a project or a computer presentation. In essence, the case integrates the methods discussed below.

As an interactive teaching method, it wins, as practice shows, a positive attitude on the part of students who see it as a game that ensures the development of theoretical positions and mastery of the practical use of the material.

When working with a case study, students develop the following components of key competencies: the ability to solve problems, communicate, apply subject knowledge in practice, the ability to negotiate, take responsibility, tolerance, reflexive skills.

Research method

The formation of a creative personality with creative thinking is an urgent task in modern conditions. In this regard, search methods are becoming more and more preferable: research and heuristic (partial search), which are based on problem learning. These methods best meet the requirements of a competency-based approach aimed at developing activity, responsibility and independence in decision-making. Both of these methods are similar; the difference lies in the degree of independence of students.
The research form of conducting classes using elements of problem-based learning involves the following activities of students:

- Familiarization with the field and content of the case study;
- The formulation of the goals and objectives of the study;
- Collection of data about the studied object (phenomenon, process);
- Conducting research (theoretical or experimental) - highlighting the factors under study, hypothesis, modeling and conducting an experiment.
- Explanation of the received data;
- Formulation of conclusions, registration of work results.

This approach makes it possible to understand the course of scientific research, different interpretations of the data obtained and finding the correct, corresponding to reality, and point of view.

The research method requires students to be as independent as possible. However, it should be noted that in groups with different levels of knowledge of students, especially at the initial stage of studying the subject. It is advisable to use heuristic methods with the active participation of the teacher. Conversations, laboratory work, tasks that involve students' independent search for new knowledge can be heuristic. For example, in the course of the study, a laboratory workshop on heuristic chemistry was developed and introduced into the educational practice of technical colleges [3]. This workshop is a solution to a number of small experimental problems, their theoretical justification using a system of chemical concepts and laws. Such activity presupposes that after a collective discussion of the plan for performing the work, the students perform the experimental tasks independently, without appropriate instructions from the teacher. In such a workshop, there is no definiteness of the frontal method of work. In the case of performing the work in “pairs”, the functions are distributed between the students. Each student works with his own reagents, individually solves his problems, and ponders his actions in the process of performing the experiment and solving theoretical tasks. Students formulate the main conclusions on their own before discussing the results of experiments in a group, which are carried out at the end of the entire work.
Research activity allows the formation of such key competencies as the ability to work creatively, independence in decision-making, develops observation, imagination, the ability to think outside the box, dialectically perceive the phenomena and patterns of the world around, express and defend one's own or group point of view.

Discussion

Educational discussions are such a form of cognitive activity of students, in which the subjects of the educational process orderly and purposefully exchange their opinions, ideas, and judgments on the educational problem under discussion. Discussions as a form of interaction between subjects of learning have recently been used in the practical activities of teachers in professional educational institutions of various stages of training. It is advisable to use them when holding problem-training conferences, symposia, in discussing problems of a complex interdisciplinary nature. The content of reports, messages may be related to the material being studied, but it may also go beyond the program, including having a professional orientation.

The discussion makes it possible to use the elements of pedagogy of cooperation of the type "teaching - learning" and "learner - learner", in which the opposites between the positions of the teacher and the learners are erased, and the outlook of the participants in the educational process becomes a common property. During the discussion, the following competencies are formed: communicative (the ability to communicate, formulate and ask questions, defend one's point of view, respect and acceptance of the interlocutor, and others), the ability to analyze and synthesize, take responsibility, identify problems and solve them, the ability to defend your point of view, and social communication skills.

1. Game playing techniques

Game playing is a type of activity that is inherent in both children and adults. Therefore, the use of this type of activity in the educational process has been known for a long time, but it is important to use an aspect of this activity that contributes to the emergence of an involuntary interest in learning the foundations of the natural sciences. In this case, a serious and deep perception of the studied material should
occur. The game should not lead to a misunderstanding of a particular problem, students should be imbued with the complexity of the material being studied and understand that the learning process is not only an interesting game. The use of different types of games - business, imitation, role-playing for solving educational problems brings variety during the subject educational process, causes the formation of positive motivation for studying this subject. The game stimulates the active participation of students in the educational process and involves even the most passive.

The practice has confirmed the effectiveness of the use of game techniques at the final stage (upon completion of the study of the topic, section, and course) of teaching chemistry, which is a general educational discipline.

At the same time, the participants in the game acquire new experience, new roles, communication skills are formed, the ability to apply the acquired knowledge in various fields, the ability to solve problems, tolerance, and responsibility.

1. Brainstorming method

This method is aimed at generating ideas for solving a problem, is based on the process of jointly solving problem problems posed during an organized discussion. The assignment may contain a professionally relevant or interdisciplinary question. At the same time, all ideas and suggestions expressed by the group members should be recorded on a board (or a large sheet of paper) so that they can then be analyzed and summarized. Sequential recording of ideas allows you to trace how one idea generates other ideas. The spirit of competition activates the mental activity of students. Consider the example offered by the author of this article in chemistry lessons in college for students studying in the specialty "Optical and optoelectronic devices and systems". 5 minutes are allocated for the brainstorming session. When considering the properties of liquid crystals, students may be asked the task: what is liquid crystal? Within one minute, students, for example, write down the answer options on the board. Students' answers: liquid with crystal properties; liquid with ordered molecules; liquid with long molecules; crystal with liquid properties; a substance that retains the anisotropy of physical properties inherent in solid crystals
and fluidity inherent in liquids, etc. At the end of the "storm", all the proposed ideas (solutions) are analyzed, in which the whole group participates. Students are told the correct answer: a liquid crystal is a stable state of aggregation, in which a substance retains the anisotropy of physical properties inherent in solid crystals and fluidity inherent in liquids. The brainstorming method allows you to involve the maximum number of students in active activity. The application of this method is possible at various stages of the lesson: for the introduction of new knowledge, intermediate quality control of the assimilation of knowledge, consolidation of the acquired knowledge (in a generalizing lesson on a specific topic of the course). "Brainstorming" is an effective method of stimulating cognitive activity, the formation of creative skills of students in both small and large groups. In addition, skills are formed to express their point of view, listen to opponents, reflexive skills.

The interactive methods discussed above were conducted in the Urgench secondary school in the process of teaching chemistry, which is a general education discipline, and confirmed that they contribute to the achievement of the results of modern education. The place of the teacher in interactive classes is reduced to the direction of students' activities to achieve the goals of the lesson. If passive methods presupposed an authoritarian style of interaction, then active ones, including interactive ones, more presuppose a democratic style based on subject relations between its participants (trainers and learners). In such relationships, the teacher is not so much a mentor as an equal participant in communication, taking into account the opinion and level of the student's individual development. The educational process proceeds in such a way that almost all students are involved in the learning process.

The joint activity of students in the process of mastering the educational material means that everyone makes their own individual contribution; there is an exchange of knowledge, ideas, and methods of activity. The collective search for truth stimulates the intellectual activity of the subjects of activity. Such interaction allows students not only to acquire new knowledge, but also to develop their communication skills as the ability to listen to the opinion of another, weigh and
evaluate different points of view, participate in discussions, develop a joint solution, tolerance, and others. Comparative analysis of the considered methods, as well as teaching practice allow us to conclude that not all of them can be equally applicable in teaching general education subjects of the natural science cycle. Given the lack of time, when studying "non-core" subjects like Chemistry, Physics, some methods (project method, case method, game techniques) require a lot of time to prepare and conduct the lesson. They can be recommended for organizing extracurricular activities or generalization of the studied material and the implementation of the integration of knowledge through the implementation of interdisciplinary connections, including with the subjects of professional training. Research, discussion form of organizing classes, as well as "brainstorming" are effective methods of developing competencies in classroom lessons. At the same time, the project method and the case method, in comparison with the other methods described by us, contribute to the formation of such competencies as the ability to highlight a problem and find ways to solve it, evaluate one's own activities, and responsibility.

The research method is a creative approach to the implementation of activities, general scientific skills, and, along with discussions, games and "brainstorming" develops the communicative qualities of a person, and tolerance. Based on the foregoing, we can conclude that it is advisable for the teacher to combine various methods and forms of organizing the educational process in order to achieve the greatest effect from their use. The considered interactive methods can be applied in teaching various disciplines in professional educational institutions of both secondary and primary, and higher professional education for the formation of competencies. In addition, in its conceptual basis - in the design of innovative pedagogical technologies that ensure the training of highly qualified professional personnel.
REFERENCES


