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### “КЛАСТЕРНЫЙ” МЕТОД КАК ЭФФЕКТИВНЫЙ МЕТОД РАЗВИТИЯ МЫШЛЕНИЯ СТУДЕНТОВ ВУЗОВ



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**Аннотация.** В этой статье рассматриваются возможности приема кластера в процессе профессиональной подготовки студентов вуза. А также раскрываются сущность и особенности применения и развивающие возможности приема кластера.

**Ключевые слова:** кластер, активность, вызов, рефлексия, мышление, студент, креативность.

### OLIV TA'LIM TALABALARINING TAFAKKURINI RIVOJLANTIRISHNING “KLASTER” USULI SAMARALI METOD SIFATIDA

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**Annotatsiya.** Ushbu maqola universitet talabalarini kasbiy tayyorlash jarayonida klasterlarni qabul qilishning mohiyati, xususiyatlari va rivojlanish imkoniyatlari ochib beriladi. Shuningdek, universitet talabalarini kasbiy tayyorlash jarayonida klasterlarni qabul qilishning pedagogik imkoniyatlari tavsiflanadi.

**Tayanch so'zlar:** klaster, faoliyat, chaqiriq, mulohaza, fikrlash, talaba, ijodkorlik.

### “CLUSTER” METHOD AS AN EFFECTIVE METHOD FOR DEVELOPING THE THINKING OF UNIVERSITY STUDENTS

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**Annotation.** This article examines the possibilities of receiving a cluster in the process of professional training of university students. The essence and features of the application and developing capabilities of receiving the cluster are also revealed.

**Key words:** cluster, activity, challenge, reflection, thinking, student, creativity.

The modern system of professional education contributes to the formation of creative thinking in students, stimulating their intellectual abilities as students. It is known that a cluster (from English - cluster - bunch) is a graphical multifunctional way of presenting educational material and is a visual result of the thought process, which is recorded in the form of a diagram indicating all the connections between them. The cluster, as one of the techniques, is a reflection of nonlinear thinking. This technique is sometimes called "visual brainstorming". In this regard, the cluster is a pedagogical technique for the development and critical thinking. [3]. Creative thinking manifests itself in modern digital education, as do scientific discovery, entrepreneurship and technical invention, the creation of works of art and relationships with people. Critical thinking develops a critical attitude towards statements, not accepting anything without evidence, but at the same time being open to new ideas, one's own opinion and reflection of one's own judgments.

Critical thinking is the fulcrum for developing an individual's independence and creativity; it is a natural way of interacting with ideas and information. Thus, creative thinking contributes to the generation of ideas. It is critical to turn ideas into reality. The organization of classes is based on a didactic cycle consisting of three stages with their own goals and objectives: challenge, comprehension, reflection.

At the "challenge" stage, a problem is generated, activation occurs, the involvement of all students schematically reproduces their existing knowledge, motivation to think. Forms an associative series, asking questions that require an answer before starting to study the topic. At the "comprehension" phase, work with information is organized: reading the text, thinking and analyzing the facts obtained, and structuring the educational material. At the reflection stage, the acquired knowledge is processed, systematized as a result of creative activity, and conclusions are drawn.

At the challenge stage, students express and record their existing knowledge on the topic, their assumptions and associations. It serves to stimulate students' cognitive activity and motivate them to think before starting to study a topic. At the comprehension stage, the use of a cluster allows you to structure the educational material. At the reflection stage, the cluster technique performs the function of systematizing the acquired knowledge.

It is possible to use the cluster throughout the entire lesson, as a general lesson strategy, at all its stages. So, at the beginning, students record the information they own. Gradually, during the lesson, new data is added to the diagram. This technique develops the ability to assume and predict, supplement and analyze, and highlight the main thing

in the material. It is advisable to design the cluster in the form of a bunch of grapes or a model of planets with satellites. The main concept is located in the center; large semantic units are designated on the sides; the structure is connected to the central concept by straight lines. These are expressions, name, parameters, measurements that indicate the content of this cluster [1].

There are significant semantic units around that more fully reveal the topic and expand logical connections. It is important to be able to specify concepts, justifying them with the help of analysis and the content of the material being studied. In this way, the studied material is systematized and generalized. Depending on the way the lesson is organized, the cluster can be designed on the board, on a separate sheet, or in electronic form when completing an individual task. When compiling a cluster, it is desirable to highlight some specific points and more clearly display the overall picture, simplifying the process of systematizing all information. Therefore, it is important that the process of studying this material was meaningful and effective, contributed to the development of critical thinking of students and stimulated them to be creative. We draw an oval on the board in the center of which we write our topic and ask students to remember everything they know about this topic. Next come words expressing ideas and facts suitable for this topic. All this is drawn up by the teacher on the board. It turns out that the primary cluster in the implementation of the challenge phase is that students can express any knowledge on the topic being studied.

The task of the teacher is to activate the cognitive activity of students. After compiling the primary cluster, we move on to this consolidation of knowledge (comprehension stage); at this stage, content is carried out with new information. Next, we move on to the stage of generalization and systematization of knowledge (reflection stage). Here the meaning of the new material and the teacher's tactics for further actions are clarified. At the same time, the teacher involves students in discussing issues of practical application of knowledge in hydraulics to solve practical problems. In further work, the resulting cluster is analyzed and various options for composing the cluster can be proposed. It is known that there are different types of clusters: classic-paper numbering words-pictures-group-reverse. When creating it, it is necessary to state and record everything that comes to mind, even if it is just associations or assumptions. During the work, incorrect or inaccurate statements can be corrected or supplemented. Students can express ideas by imagining and intuitively. Between a significant numbers of semantic units, it is necessary to establish connections between them. During the analysis process, everything is systematized [2].

The cluster technique can be used in almost all classes when studying a variety of topics. The form of work when using this method can be absolutely any: individual, group and collective. It is determined depending on the goals and objectives set, the capabilities of the teacher and the team. It is permissible to flow from one form to another. For example, at the challenge stage, it will be individual work where students create their own cluster. As new knowledge is acquired, as a joint discussion of the material covered, on the basis of personal drawings and taking into account the knowledge gained in the lesson, a general graphic diagram is drawn up. The cluster can be used as a way to organize work in class and as homework. In the latter case, it is important

that students have some experience in its preparation. The use of a cluster has the following advantages: it allows you to cover a large amount of information; involves all participants in the educational process in the learning process; students are active, they have no fear of making mistakes or expressing the wrong judgment. Logic and systems thinking are developing. In the course of this work, the following skills are formed and developed: the ability to pose questions, diversify the types of educational activities; highlight the main thing; establish cause-and-effect relationships and draw conclusions; move from particulars to generalities, understanding the problem as a whole; compare, analyze and synthesize information; draw analogies and develop abilities for creative processing of information. What benefits does the use of the cluster method give to students in the classroom?

Reception of the cluster develops systematic creative thinking, develops the ability to systematize not only educational material, but also their value judgments, students develop and express their opinions formed on the basis of observations, experience and new knowledge gained, develops the skills of simultaneous consideration of several positions, the ability to creatively process information. Thus, classes using the cluster technique give students the opportunity to express themselves, express their vision of the issue, and the productivity of mental and creative activity increases.

**Conclusion.** Students relate to the educational material as a co-author, a connection is established between reading and adding new knowledge. In general, the reception cluster used in the educational process increases the motivation of students, creates an atmosphere of cooperation and serves to develop the professional knowledge of students.

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