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METHODOLOGY OF USING COLLABORATIVE TEACHING TECHNOLOGIES BASED ON THE 5E EDUCATIONAL MODEL IN TEACHING THE SUBJECT OF "HIGHER NERVOUS ACTIVITY"

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Abstract. This article discusses the methods of involving students in learning activities and developing their cognitive competence based on the integration of 5E educational models in teaching the topic “HIGH NERVOUS ACTIVITY” Keywords. 5E educational model, involvement, discovery, explanation, reinforcement, assessment, competence, knowledge, competence, skills.

Introduction. Nowadays, it is an urgent task to explain in-depth teaching of biology and the processes of applying students' knowledge to practice in easy and effective ways, as well as to simultaneously form knowledge, skills and abilities in the teaching process. Among other subjects, there are opportunities to develop students' cognitive abilities through integration in biology. The work of a number of scientists in teaching biology can be recognized. In the works of J.O. Tolipova, we can see in her scientific works that knowledge is formed during the teaching process and skills are developed in laboratory and practical classes. However, the formation of knowledge, skills and abilities in students through the simultaneous, parallel implementation of knowledge, skills and abilities in practice has been neglected.

Literature review. Collaborative and integrative approaches to teaching biology have been studied by many scientists. In particular, in the works of J.O. Tolipova, collaborative teaching technologies provided information about working in groups, working together with group teams, and jointly organizing educational tasks [1]. Foreign scientists have also conducted many scientific studies on inquiry-based education. In particular, J. Dostal considered the priority areas of problem solving in terms of applying inquiry-based education from academic education to everyday life and improving problem-solving skills related to the development of these areas [2]. Tamene Atsehiba Tegegne and Asrat Dagnev Kelkay have found evidence in their scientific work that the 5E learning cycle serves to develop the learner's motivation by comparing traditional learning processes with the 5E learning cycle [3]. Research by Francesc Garcia I Grau, Cristina Valls, Nuria Pique

and Hector Ruiz-Martin has shown that the 5E model is an educational model based on integration with other subjects, constructivism and reform of the learner [4].

Research methodology. In recent years, the goal of professors and teachers has been to organize the educational process qualitatively, while simultaneously using educational methods and models that motivate the learner and encourage activity. In implementing this goal, the use of the 5E educational model through collaborative learning technology has priority areas such as developing the student's cognitive activity and motivating him to activity. In particular, through the 5E model, students simultaneously develop such abilities as creating their own questions on the subject (forming creativity), finding their own evidence to answer questions (forming the research competency), explaining evidence and linking it to the knowledge obtained on the basis of this evidence (developing the knowledge, skills cycle), and forming new evidence and foundations based on the acquired knowledge (forming competence). The 5 E model of inquiry-based learning helps to develop cognitive competence in students and increases student engagement in the learning process. Collaboration, on the other hand, involves students in working together, taking into account the opinions of group participants, respecting each other, and embodying universal human values.

Successfully engaging learners in an “active” activity helps to develop their motivation.

The 5 E model of inquiry-based learning includes the following steps:

1. Engage: This is usually the first step of the 5E model and is used to arouse students’ interest and help them connect new phenomena with their prior knowledge. This step of the 5E model also aims to identify students’ misconceptions that need to be addressed through the teacher-designed lessons [5].

In the first step of inquiry-based learning, students are first asked to identify their underlying knowledge and then to ask open-ended and closed-ended questions about the topic or to conduct group-based inquiry on a specific project. For example, everyday examples of higher nervous activity (e.g., stress, mood swings) can be shown. Based on these inquiries, the presence of skills is determined and conceptual knowledge is formed.

2. Exploration: In this phase, students investigate the phenomena observed in the engagement phase and answer questions they have generated based on their observations [6]. The exploration phase may involve simulation programs or research on how the higher nervous system works. For example, it may involve conducting a short scientific study on the nervous system and its functions. Groups

present their results, which provides students with an opportunity to analyze the information together.

3. Explanation: In this stage, the teacher helps students integrate the information gathered in the exploration stage. However, the level of direct instruction and explanation from the teacher can vary depending on the level, age, and readiness of the students [7]. When explaining complex topics such as higher nervous activity, infographics, animations, videos, and interactive diagrams are used to explain a new topic. These materials help to reinforce students' understanding.

4. Elaboration: This stage determines whether students can apply what they have learned to new areas and solve real-world problems [8]. The key aspect of this stage is to make connections to real life. Students are asked to explain higher nervous activity by relating it to real-life situations. For example, explaining how the nervous system of athletes, artists, or everyday people works. This helps students understand the topic in an interesting and practical way.

5. Evaluation: In this stage, students evaluate their own knowledge and the teacher assesses students' understanding and ability to apply knowledge in multiple domains [9]. Providing students with opportunities to evaluate their own knowledge, such as through tests or self-assessment forms, can be an effective tool for monitoring their progress and understanding. Inquiry-based learning enables effective collaboration and communication, strengthening subject-subject relationships, and achieving the goals of the learning process.

Analysis and results. This educational model was intended to examine the impact of students on their cognitive activity. In this process, the criteria for assessing students' knowledge and indicators of their level of development were determined. The results of the experiment show that the results of the experimental group (when compared with the control group) led to a higher indicator of F>10.2 (12%), and according to the results of pedagogical experience - testing, the technology of increasing the quality and efficiency of students' creative preparation based on the activation of educational activities recommended by the results of the test was confirmed to be effective. It turned out that students had acquired knowledge, skills, and qualifications in subjects that were sufficiently developed for the content of cognitive activity. Suggestions and conclusions. The shortcomings of this educational model can lead to a decrease in individual cognitive activity. To prevent this phenomenon, the following suggestions can be made.

1. Involve students in online discussion platforms and develop special tasks for independent work.

2. Give students a series of tasks, such as creating digital stories.

Teaching the topic “HIGH NERVOUS ACTIVITY” using collaborative learning technologies based on the 5E learning model not only strengthens students’ knowledge, but also develops their teamwork and communication skills. This methodological approach allows students to delve deeper into the topic and look at it from a new perspective.

References.

1. J.O.Tolipova “Biologiyani o‘qitishda pedagogik texnalogiyalar”. – Toshkent: Cho‘lpon, 2011.

2. Dostal, J. (2015). Theory of problem solving. Procedia - Social and Behavioral Sciences 174 (2015) 2798-2805 Published by Elsevier Ltd.

3. Tamene Atsehiba Tegegne and Asrat Dagnev Kelkay “Comparative study of using 5E learning cycle and the traditional teaching method in chemistry to improve student understanding of water concept: The case of primary school” Cogent education. Vol:10.2023. Issue 1.

4. Francesc Garcia I Grau, Cristina Valls, Nuria Pique va Hector Ruiz-Martin “ The long-term effects of introducing the 5E model of instruction on students’ conceptual learning”, International journal of science education. Vol:43.2021.Issue9

5. How to Use the 5E Model in Your Science Classroom. Edutopia. Retrieved 5 October 2023.

6. Quitadamo, Ian J, and Ryan Campanella. “Cougars, Curriculum, and Community.” *The Science Teacher*, vol. 72, no. 4, 1 Apr. 2005.Accessed 24 Sept. 2023.PP.28-31

7. How to Use the 5E Model in Your Science Classroom. Edutopia. Retrieved 5 October 2023.

8. How to Use the 5E Model in Your Science Classroom. Edutopia. Retrieved 5 October 2023.

9. Quitadamo, Ian J, and Ryan Campanella. "Cougars, Curriculum, and Community." *The Science Teacher*, vol. 72, no. 4, 1 Apr. 2005, pp. 28–31. Accessed 24 Sept. 2023.