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The Importance of Group Work in Improving the Effectiveness of Practice-and Theory-Based Biology Classes

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Annotation: the purpose of this study is to assess the effectiveness of Applied Learning in the context of collaboration (group work) between students on a topic based on biotechnology.

Introduction: A.V. As Petrovsky noted: learning is the human connection with humanity. Education is not only the transfer of knowledge and skills from generation to generation, but also the exchange of experience, ideas and values between people. A person learns not only from books and lectures, but also through communication with other people - teachers, colleagues, friends and even random acquaintances. This communication is a learning force that not only develops intelligence and professional skills, but also contributes to personal growth and worldview formation.

The works of Verzilin N.M., Vsesvyatsky B.V., Nikishov A.I., Pasechnik V.V., Ponomareva I.N., Solomin V.P., TraitakaD.I. and others are devoted to the problems of professional training of future teachers in the field of theory and methodology of teaching biology. At the same time, a number of researchers (Orlova L.N., Mironova M.N., Sukhorukova JI.H et al.) note a significant gap between the existing special training (Slastenin V.A.) of future biology teachers, focused on the formation of knowledge and skills in the field of biological sciences and ecology, and methodological training, focused on the formation of knowledge in the field of the content and principles of building school curricula, modern requirements for teaching methods of biology, organizational and methodological skills.

The existing gap is due to the traditional structure of special training for biology teachers, the content of which does not sufficiently take into account the specifics of the professional activities of future graduates in the changed conditions. Scientific and methodological works by Andreeva N.D., Arbuzova E.H., Ermakova A.C., Kolmykova V.A., Makarova E.A., Orlova J.T.H., Solomin V.P., Stankevich P.V., etc. They are devoted to the issues of improving the system of training biology teachers in the context of modernization of education, including the transition to a two-level system. An analysis of the research of the above-mentioned authors has shown that in the process of special training of bachelors of pedagogical education (biological profile), the following are insufficiently taken into account: the competence approach; the orientation of educational modules on the formation of not only knowledge and skills in the field of biological sciences and ecology, but also methods of teaching biology; the application of professional tasks; the implementation of such forms of classroom and independent work that allow you to reproduce the professional activity of a biology teacher in the context of student learning activities.

Based on scientific and methodological work in the field of the application of the competence approach in the preparation of bachelors, including the natural science profile (Gavronskaya Yu.Yu., Ivanova V.I., Kolomin V.I., Matveeva T.A., MyltsevaN.A., etc.), under the special professional competencies of a bachelor of pedagogical education (biological profile), we will understand the totality of scientific knowledge in the field of biology and methods of teaching biology; skills related to the organization and conduct of biological observations and experiments; skills in the field of teaching biology; experience in applying the above-mentioned knowledge and skills to solve professional problems. At the same time, the professional task of a biology teacher (Slastenin V. A. Talyzina N.F., etc.) will be understood as a conscious pedagogical situation in the activity of a biology teacher aimed at transforming pedagogical reality in order to form a student's knowledge about biological objects, their origin and development, functioning, dissemination and interrelationship, and also with the outside world; the ability to solve biological problems, set experiments and explain their results. Based on the analysis of scientific and pedagogical works devoted to the competence approach (Adolf V.A., Verbitsky A.A., Zimnaya I.A., Kolesnikova I.A., Markova A.K., etc.), the problems of forming the subject competence of future teachers (Doroshenko E.G., Kazachek H.A., Makhaevat.P., OsipovaL.A., It can be concluded that the subject competence of a bachelor of pedagogical education (biological profile) should be understood as the possession of relevant special professional competencies.

Currently, the effectiveness of the methodology of teaching biology, especially in the field of education, remains an urgent topic. At the present stage, the goal of biological education is to prepare a biologically and environmentally harmonious personality, which should understand the importance of life as the highest value. Modern man, no matter what type of activity he prefers in the future, should be able to build his relationship with nature on the basis of respect for Man and the environment [1.2]. It promotes not only giving students memorizing material, but also giving them assignments that require active thinking and reasoning , as opposed to watching others work, reading other people's instructions or descriptions, or listening to other people's instructions or lectures [3].

Main part: the study used a method of collective approach to learning, called the Jigsaw method [4]. A “mosaic” division method was used to Form 4 groups [5]. Students from president maktai's 11th grade in Bukhara were selected as the object of study. In this case, before and after the study, participants were asked to take the Google form test, which consists of 12 questions divided into 2 parts: theoretical (6 questions) and practical questions (6 questions). The Test was scored on a 6-point system (6 = Excellent, 5-4 = good, 3-2 = satisfactory and 1 = bad). The pre-and post-class test questions were of the same content. The scores collected before and after class were combined and compared for efficiency using the standard deviation and paired sample T-test. All statistical calculations were carried out manually and using the Excel program. The study used a method of collective approach to learning called the’ Jigsaw method " [4]. A “mosaic” division method was used to Form 4 groups [5]. The essence of this is that the teacher must prepare a picture or text in advance in parts (in our case, the image of DNA, a microscope, a virus and a butterfly is divided into 4 parts) and distribute it to all students. The goal of students is to find the right part of the image among the remaining students. In the structure of this method, students are members of two different groups, "team groups" and "expert groups"of 3-5 people to work on educational material divided into sections. Each student in each”team

group " is given a portion of the material.

Team groups are then divided like puzzle pieces, and each team team sends their representatives along with another representative to form all other teams and form "expert groups". In Expert Groups, students study intensively so that they have a good understanding of their special materials and prepare them for teaching among their peers. Subsequently, each student returns to his or her community group, where he or she teaches the rest of his or her group the material he or she is given, and learns other minor topics from his or her peers in the group [5]. The algorithm of actions is shown in Figure 1.

Figure 1. Algorithm of the lesson passed through the Jigsaw method.

Students were asked to take the Google Test after class and before class. Figure 2 shows the results obtained.

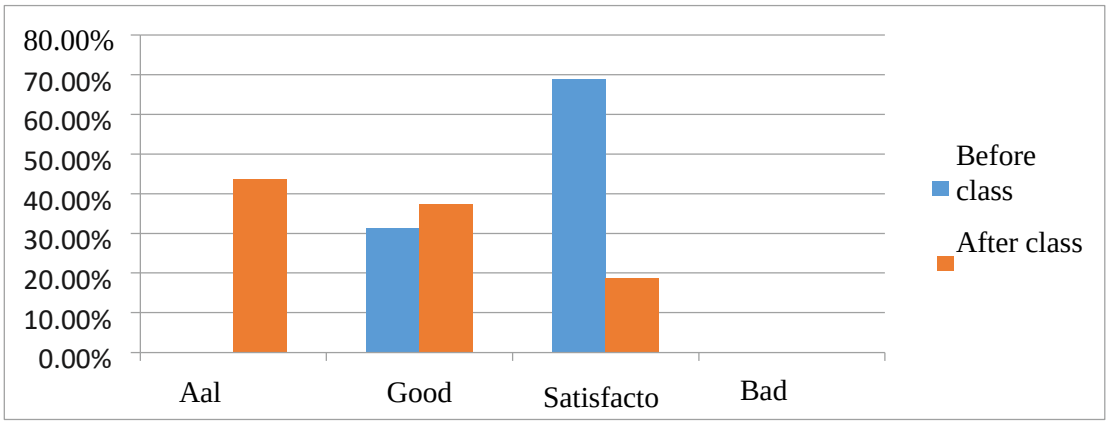

Figure 2. Student results on theoretical issues before and after classes.

In the" excellent " category, the proportion of students who took a pre-test course was 0%, while after class this rate increased to 43.75%. The proportion of students who received a "good" pre-class score was 31.25%, compared to 37.5% after class on the "Jigsa" method. Further analysis revealed that the number of students who achieved 68.75% "fair" results at the beginning of the course decreased to 18.75% after the lesson. None of the students received a "bad" grade. The average arithmetic score of students who took a pre-class test on theoretical issues was 3.19 points, while after the lesson the rate increased to 5.06 points. This observed increase shows the positive effect of the lesson on students ' understanding and mastering of theoretical material. This study was also applied to practical lessons and the necessary results were obtained.

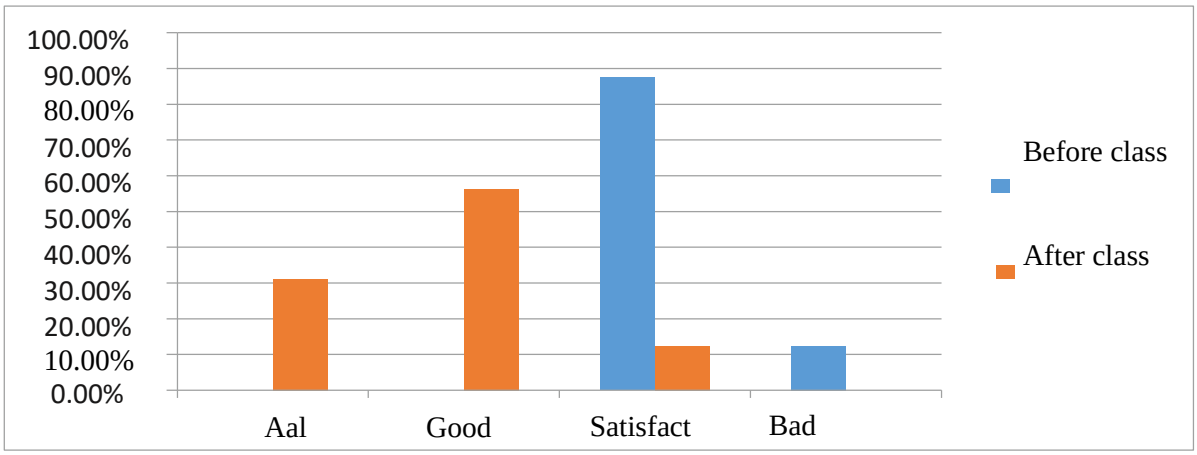

Figure 3. Student results on practical issues before and after classes.

The proportion of students who took the pre-class practical questions test and scored “excellent” increased from 0% to 31.25%, and “good” from 0% to 56.25%. If we consider in detail, the proportion of students who received a “fair” score at the beginning of the lesson decreased from 87.5 percent after the lesson to 12.5 percent. It should also be noted that the proportion of students who received a "bad" score before class decreased from 12.5% to 0%. In addition, a significant increase in the average arithmetic score of students from 2.19 to 4.88 points after using the “Jigsaw” method in the lesson indicates its effectiveness in deep mastering of practical material.In addition, a comparative analysis of the results was carried out before and after the session using the paired sample T-test. For theoretical issues: t-statistical value: 14,478, p value: < 0,001, for practical issues: T-statistical value: 19,104, P-value: < 0,001. In both cases, p values are significantly lower than the selected significance level, indicating a statistically significant difference between pre-and post-class outcomes on both theoretical and practical issues. Therefore, a lesson on theoretical and practical issues has positively influenced the educational activities of students, leading to a statistically significant increase in their average score.

Conclusion. In conclusion, in this study, we examined the effectiveness of practical training using the Jigsaw method. Unlike traditional methods, the use of the Jigso method in practical training for students of Biological Sciences has paid off. When comparing the total test scores, we observed improvements among students after training with the Jigsaw method and emphasized its effectiveness as a teaching approach.The use of Group methods, in particular the Jigsaw method chosen for our research, gives positive results in solving problems with non-uniform solutions. In addition to carrying out teaching tasks, the use of such group methods in teaching provides students with the opportunity to work cooperatively and develop their psychological skills through interpersonal interaction.

LITERATURE USED:

1. I.I. Burlakova, “Talabalarning kasbiy tayyorgarligi tizimida interfaol texnologiyalardan foydalanish. Orel davlat universitetining ilmiy eslatmalari. Seriya: Gumanitar va ijtimoiy fanlar 5 335 (2014)
2. Ch.A. Aminjonova, G.O.Akbarova, “Tibbiyot oliy o‘quv yurtlari va umumta’lim maktablarida “Biologiya” fanini o‘qitish metodikasi va muammolari”. EuMedJ 2 6-8 (2020).
3. H. W. Reese, The learning-by-doing principle. Be. Dev. Bul, **17(1)**, 1–19 (2011). https://doi.org/10.1037/h0100597
4. O.I. Amedu, "JigsaW usuli yordamida biologiya bo'yicha talabalarning yutuqlariga jinsning ta'siri". J.of Ed. Amaliyot. 6.17 176-179 (2015).
1. 5.https://infourok.ru/priyomi-deleniya-gruppi-na-komandi-2869186.html#:~:text=%D0%9C%D0%BE%D0%B7%D0%B0%D0%B8%D0%BA%D0%B0.,%D0%A0%D0%BE%D0%BB%D0%B8%2C%20%D0%BF%D1%80%D0%B5%D0%B4%D0%BF%D0%BE%D1%87%D1%82%D0%B5%D0%BD%D0%B8%D1%8F.