The American Journal of Social Science and Education Innovations
ISSN 2689-100X | Open Access

TYPE Original Research
PAGE NO. 63-66
DOI 10.37547/tajssei/Volume07Issue05-08

Check for updates

The importance of using modular training in teaching the blue-green algae division

M.N. Khayitova

Researcher, Tashkent State Pedagogical University named after Nizami, Uzbekistan

OPEN ACCESS

SUBMITTED 13 March 2025
ACCEPTED 09 April 2025
PUBLISHED 11 May 2025
VOLUME Vol.07 Issue 05 2025

CITATION

M.N. Khayitova. (2025). The importance of using modular training in teaching the blue-green algae division. The American Journal of Social Science and Education Innovations, 7(05), 63–66.
https://doi.org/10.37547/tajssei/Volume07Issue05-08

COPYRIGHT
© 2025 Original content from this work may be used under the terms of the creative commons attributes 4.0 License.

Abstract: The paper involves the data about modular teaching of blue-green division in the module of Tallobiontha. So modular teaching is one of the promising systems of teaching, as it is best adapted to the system of developing the cognitive capabilities and creative abilities of learners. With the help of the module program, students, working in small groups and working together, will learn about the characteristics of the Blue-Green Algae Division. It means the reason of algae rapid reproduction in plankton, determines their role in human life and nature.

Keywords: Module, algae, teaching methodology, systematic units, the structure of plants, observation, recognition, separation.

Introduction: As the module is self-instructional package it lacks face-to-face interaction between the teacher and the taught. The teacher's role is considered to be in-built in the module. At the final stage when the learner has attempted the mastery post-test there is a stage to make the feedback and reinforcement available. For that purpose the responses to the test-items be clearly justified to be right or wrong with some rationale. So that the students may avoid any confusion and are properly enriched reinforcement with necessary feedback process for the process for the purpose of reinforcement and feedback (Farooq, 1997). Modular teaching is a new teaching strategy in classroom settings, for arranging learning experiences in education and it has been receiving much attention. The strategy of learning modules has become a part of all level of teaching. A learning module is a self - learning package dealing with one specific subject matter/ unit. It can be used in any setting convenient to the learner and may

be completed at the learner's own pace. Sufficient theories and practices are available for the practical application of modular teaching in our classrooms. Therefore a study was conducted in order to check the effectiveness of modular teaching [4; – Pp.49-54]

According to the content and essence of the module programs: module programs designed for students to work individually, each student's talent, interest, level of knowledge, determination and acquisition of mastery level, independent and creative work on the textbook, individual development of self-assessment skills; module programs intended for two students to work together, except for those mentioned above. Students to teach each other, to perform educational tasks and solve problems in cooperation, to carry out mutual control; module programs intended for students to work in small groups together with the above provide for communication, discussion and discussion, mutual cooperation and support between students. The teacher uses individual module programs before these module programs. After making sure that the students have developed the skills of independent and creative mastering of educational materials, after the creation of appropriate pedagogical conditions for the module programs intended for two students to work together. Should use module programs intended for working in small groups [2; –Pp.272-274].

METHODOLOGY

Modular teaching is one of the promising systems of teaching, as it is best adapted to the system of developing the cognitive capabilities and creative abilities of learners. In traditional education, educational goals are expressed through the activities of the teacher, that is, they are aimed at imparting knowledge, while in modular teaching they are expressed through the activities of learners and are aimed at professional activity.

We have listed the features of modular teaching technology that distinguish it from traditional teaching in the table below. In education based on modular teaching technology:

- encouraging active participation in learning through thinking and practical activities,

- two-way communication,

- memorizing information through analysis,

- demonstrating knowledge and skills,

- understanding the content and relating it to life. Below we will make a plan for completing tasks in the blue-green algae section of the bottom plants module.

Lesson topic: Division of blue-green algae.

Educational goal of the lesson: To introduce students to the pigments contained in the thallus of species belonging to the department of blue-green algae, their reproduction methods and their importance in nature and human life.

Educational goal of the lesson: To form a conscious attitude towards the world of aquatic plants, to provide ecological, economic, aesthetic and moral education.

Developmental goal of the lesson: To develop students' knowledge of systematic units, the structure of plants, observation, recognition and separation of plants, and independent work on the textbook.

Lesson equipment: visual aids for the structure of Nostoc, Tolypothrix, Anabena species, online botanical platforms, herbariums and presentations.

Technology used in the lesson: Modular educational technology and case study method.

Course of the lesson:

I. Organizational part.

II. Determining and analyzing students' knowledge of algae on the topic covered through problem-solving questions.

III. Introducing students to the topic, purpose, and course of the lesson and directing their activities to complete educational tasks.

IV. Studying a new topic:

a) distribute the module program compiled on a new topic and familiarize students with the didactic purpose of the module program;

b) direct students' activities to independently complete the educational tasks in the module program;

c) monitor the complete implementation of the tasks of each educational activity element, give appropriate instructions;

g) conduct a question-and-answer or discussion at the end of each educational activity element. The teacher divides the educational material studied in this lesson into two logically completed parts, that is, modules:

- General characteristics of the blue-green algae department.

- Explain vegetative and asexual reproduction, describe their life cycle.

On this basis, the following module program is compiled.

A module program designed for students to work in small groups on the topic "Blue-green algae division".

Theoretical information

The algae included in this section are the oldest representatives of the plant world and differ from other

algae in their very simple structure. The cell shape can be round, barrel-shaped, cylindrical and other shapes. Blue-green algae are unicellular and colonial organisms, and multicellular representatives have straight or bent, even spiral shapes. The cell contains various pigments, among which blue - phycocyanin and green chlorophyll pigments are more abundant. The living part of the cell of blue-green algae, similar to bacteria, is not divided into a nucleus and other cell organelles. Blue-green algae reproduce vegetatively and asexually. They usually reproduce by dividing their cell into two. In addition, filamentous representatives reproduce by dividing their threads into several parts, that is, by hormogony.

In representatives living in colonies, the division of the colony is observed. They do not reproduce sexually, sometimes they produce spores. In this case, ordinary vegetative cells turn into spores. Spores serve not for reproduction, but to protect the species from unfavorable conditions. These algae are distributed throughout the Earth, live in fresh and salt waters, participate in the formation of plankton and benthos. They multiply very quickly in plankton, causing water to "bloom", as a result of which the water becomes unfit for drinking. Blue-green algae are also found on the surface of the soil and in its upper layers.

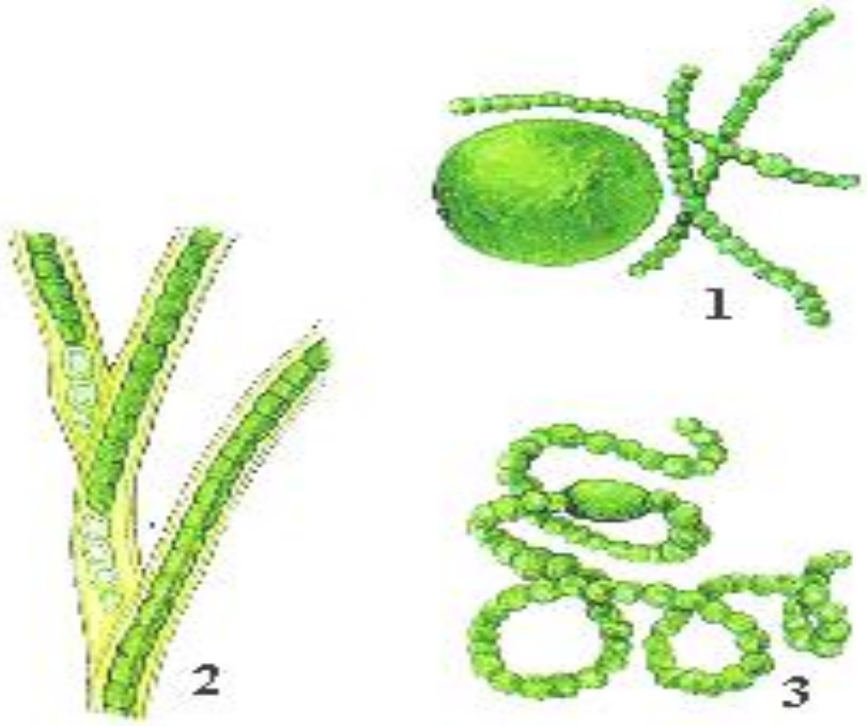

Fig.1. ***1– Nostoc; 2– Tolipotrix; 3– Anabena***

They help to accumulate organic matter in the soil. Some species fix atmospheric nitrogen, increasing soil fertility. Blue-green algae differ from other algae in their cell structure. The cell consists of a shell and protoplast. The cell shell is made of pectin, sometimes chitin is also found.

There are no vacuoles in the protoplast. Chromatoplasm contains various dyes such as chlorophyll, phycocyanin, carotene, and fucoerythrin, which give the cell a more blue-green color. Centroplasm is colorless, and it contains DNA, nucleic, and thymonucleic acids characteristic of the nucleus. Chromoplasm also performs the function of photosynthesis, since chromatophores are found scattered in it. Starch is not formed in them. As a product of photosynthesis, polysaccharides - glycogen and proteins - valutin are accumulated [3; - Pp.45-46].

Didactic purpose of the module program. With the help of the module program, students, working in small groups and working together, will learn about the characteristics of the Blue-Green Algae Division, the reasons for their rapid reproduction in plankton, determine their role in human life and nature, and in the development of economy, and develop the skills to work independently on the textbook.

V. Completion of the module program.

VI. Monitoring and evaluating the knowledge acquired by students on a new topic using non-standard test tasks.

VII. Processing and finalizing the new topic.

VIII. Assigning homework. After the completion of the module program, the teacher recommends problem situation tasks to students on a new topic. After the students determine the answers to the problem situation tasks, the teacher announces the correct

answers. Thus, the student checks his answers himself and puts his assessment in the appropriate graph of the module program. Thus, the student exercises self-control. In addition, the effective use of the case study method during the lesson gives high results.

The case study teaching method is a highly adaptable style of teaching that involves problem-based learning and promotes the development of analytical skills. By presenting content in the format of a narrative accompanied by questions and activities that promote group discussion and solving of complex problems, case studies facilitate development of the higher levels of Bloom's taxonomy of cognitive learning; moving beyond recall of knowledge to analysis, evaluation, and application. Similarly, case studies facilitate interdisciplinary learning and can be used to highlight connections between specific academic topics and real-world societal issues and applications. This has been reported to increase student motivation to participate in class activities, which promotes learning and increases performance on assessments. For these reasons, case-based teaching has been widely used in business and medical education for many years [1; -Pp.21-28].

CONCLUSION

Modular teaching involves separating the content of the lesson into separate elements; achieving mobility (practicality) and speed of knowledge; adapting the content of the lesson and the ways to achieve it to the individual needs of the learner; ensuring professionalism in the learner's cognitive and pedagogical activities; ensuring effective cooperation between the learner and the teacher; relying on errors, saving learning time, coherence, activity, arousing interest, problem-solving, and cognitive visuality (observable by eye) are achieved.

REFERENCES

Kevin, M Bonney. Case Study Teaching Method Improves Student Performance and Perceptions of Learning Gains. J Microbiol Biol Educ. 2015 May 1;16(1):21–28. doi: 10.1128/jmbe.v16i1.846]

Usmanova, M.S., N.M.Abdibannonova. Use of Modular Teaching Technology in Biology Education. International Journal of Inclusive and Sustainable Education. Volume 1, No 5.,2022. –Pp.272-274

Khujanazarov, U.E., Mavlonov H., Sadinov J.S. Botany. Systematics of plants. – Tashkent: Innovation-Ziyo, 2022. – Pp.45-46

Riasat Ali, Safdar Rehman Ghazi, Muhammad Saeed Khan, Shukat Hussain, Zakia Tanzeela Faitma. Effectiveness of Modular Teaching in Biology at Secondary Level. Asian Social Science Vol. 6, No. 9; September 2010. – Pp.49-54