A.A. Mautenbaev et al /J. Pharm. Sci. & Res. Vol. 10(12), 2018, 3214-3215

ISSN:0975-1459
Journal of Pharmaceutical Sciences and Research
www.jpsr.pharmainfo.in

Using the Mindmap Method (Associogram) in the Study of Biology

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Abstract

In order to enhance the work of students, the paper considers one of the types of modern educational technologies – the innovative MindMap method (associogram). The paper reveals the meaning of this method and substantiates its importance for the development of the learning system of present students. Also, here are some examples of working with intelligence maps, clarifying the procedures for such work, areas of use, materials and methods, summarizing the results of working with students using MindMap. An associogram as a result of the process of mastering and understanding the educational material by students may be useful for analysis by modern scholars of the pedagogical process at higher educational institutions in general and relevant ways to transfer the content to students in particular.

Keywords: MindMap method, associogram, biology, fungi, individual work of students.

INTRODUCTION

Modern pedagogy is impossible without continuous mastering by teachers of new methods of presenting educational content that come into our lives as technology develops and innovative processes are accelerated. To make the learning process more effective, to transfer to students the knowledge that meets today's standards, one needs to apply modern teaching methods. One of these methods is the associogram, or MindMap. Modern man receives a huge amount of information from all spheres of life, and this information is quite difficult to save and process in such volume.

Graphic methods of recording knowledge and building models over the centuries have been used in teaching methods, brainstorming, memorization, and work with visual thinking to solve problems arising in the course of teachers' activities.

Some of the earliest examples of such graphic writing methods were developed by a third-century AD philosopher Porphyry of Tyros. He graphically depicted the concept of categories of the philosophy of Aristotle. The philosopher Raymundus Lullius (1235-1315) also used this technique [1].

Analogs of various communication diagrams have been used since rather early times, but the creator of the modern method of mental maps (MindMap), as we know it now, is Tony Buzan, an English psychologist. The first book describing the technique of mental maps, "Use Your Head", was published in 1974. Scientists at the University of London Farrand, Hussain and Hennessy [2-3] studied the effectiveness of using the MindMap teaching methodology.

One of the positive aspects of the MindMap method is that it is based on the principles of the human brain: associative or nonlinear thinking, the ability to visualize mental images and holistic perception [4-6].

MATERIALS AND METHODS

The following are necessary as auxiliary tools: a white noninterlaced paper of at least A4 size, a pencil, an eraser, and colored pencils. Associograms do not have to be made in color, but the color design helps to memorize information better. In any case, the presentation of the associogram on slides, on a flipchart, on a board, etc., or using MindMap computer software is permissible.

The procedure for working with MindMap.

1. The central image is drawn in the center of the sheet; a sheet of paper is placed horizontally.

2. From the central image, branches of the first level go, which should be highlighted in different colors. Each branch contains words associated with key concepts that reveal the central idea.

3. Words are written legibly, in capital letters, important ideas are written in larger size.

4. From the branches of the first level, if necessary, branches of the second level are displayed, revealing the ideas described in the branches of the first level. For each branch, a keyword or phrase is written, room is left for the possible addition of details.

5. If possible, the maximum number of colors to draw a map is used.

6. Wherever possible, pictures, symbols, and other graphics associated with keywords are added.

7. If necessary, arrows connecting different concepts on different branches are drawn.

Intelligence maps help to cope with a huge flow of information, solve complex tasks, and effectively organize various events.

RESULTS

When working with MindMap for the first time, a teacher helps students create an intelligence map. The result is an illustrated diagram in which one can easily see the relationships among different sections of the map. Such a scheme is easily remembered and gives a clear plan of action for the implementation of goals. The map clearly shows what has already been done and what has yet to be done.

To work with MindMap, students were given the following topics, with the help of which they had to create their own associative map on the topic "Fungi" (the discipline "Biology"):

1. The structure of fungi affecting cereals.
2. Nutrition of fungi affecting cereals.
3. Reproduction, distribution, and survival of fungi that infect crops.
4. The development cycle of fungi affecting cereals.
5. The influence of external factors on the development of fungi affecting cereals.
6. Classification of fungi affecting cereals.
7. Features of the infection of cereals by fungi.

Using this method, students were able to create such a map themselves (Figure 1).

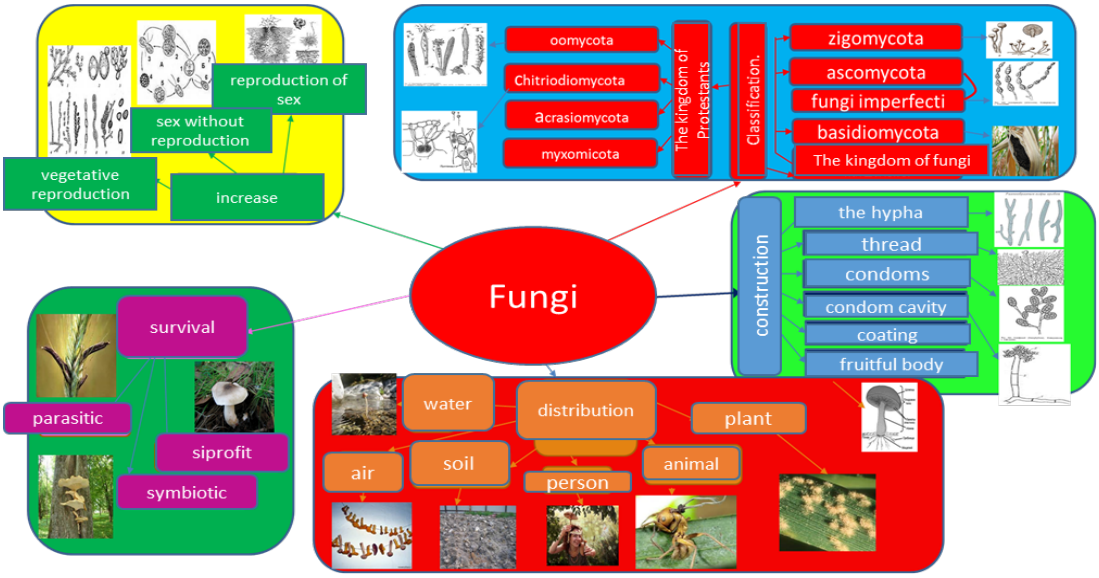

Figure 1 – Bioecological specifics of fungi.

An associogram on the course of the discipline "Biology" is a tool for activating and organizing individual and collective mental activity of students. Therefore, it is important for the teacher not only to know the options and ways of applying the method and to be an experienced compiler of the associogram but also to be able to manage the development of this tool of thinking and perception of information by students in accordance with their intellectual features, using all types of assessment. The main criteria for assessing the performance of an association can be the quality of associations, the number of associations per unit of time, the originality of associations.

Thus, the main task of the associogram is to visually reveal the meaning of concepts by restoring associative links. The associogram acts as an aid for all types of student activities (lectures, laboratory classes, practical classes, seminars, individual students' work, individual work under the teacher's supervision, etc.)

Conclusions

Due to the use of the associogram method, the student classes in groups became more lively, interesting, the teachers were able to identify the personal qualities, individual characteristics and views of each student on the proposed tasks.

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