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At Secondary Schools the use of Ikt at Biology Lessons

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Abstract
The article deals with the modern methods, IKT, interactive education, the usage of different systems which apply to the teaching process of biology. Preparation of *on-line* tests and other kind of materials for control, the role of on-line issues and internet is immutable in checking the pupil's knowledge in a short time by a teacher on any theme and checking control works, editing, individual working of the pupils on any section for the missing lesson, and in receiving different new information on that subject. The efficiency of new methods was also considered in this article.

Keywords: biology lessons, on-line tests, control works, modern lessons, self-tution, self-education

Introduction

At secondary schools the use of computer technology at Biology lessons coincides with the concept "it is better to see once than to hear hundred times". The use of information technologies in teaching of Bilogy plays a significant role in reforms realized in education and also in the compiling, adapting of educational programs. Carried out investigations, observations and comparisons by us show that in order to interest the audience motivation, stimulus is very obligatory. When we teach any kind of theme in experimental and control class with different methods it appears that until we haven't made the audience (pupil, student) participants, their perception level will be minimum [1, 2]. According to our observations, in the class or in the lecture hall the weakest pupil or student can be brought to the middle or excellent level in the result of motivation and stimulus. And we have corroborated it in our practice more than once. Making of multimedia programs and computer textbooks are of the achievements of the modern technology [5, 7]. Such programs not confining itself to help learning of biological knowledge, factual events more visual and in detail, they may show different stages of activity, creature, existence of any breather beginning from viruses to the giant breathers. The advantages of multimedia presentation in comparison with conventional methods are varied: visual presentation of the material, possibilities of reasonable control of knowledge and so on. For example, when teaching pupils the material on any object visually and comparatively by ICT, the reasoning ability of the pupils develops, the taught knowledge are deep and stable [6]. While using comparative method, at first it is necessary to train pupils to the observation. Meanwhile, their ability of independent technology use should be developed.

Formulae

During the experiment the answers of the students to the questions were calculated under the formulae used in methodical literature 4):

1.Knowledge level of the students (perception rate)

$$M_1 = \frac{\sum x}{N_1} \cdot 100;\ M_2 = \frac{\sum x}{N_2} \cdot 100$$

Here, M_1 and M_2 isare perception rates, correct answers; N_1 and N_2 are the numbers of the students.

2.To check learning rationality (efficiency) of the students

$$U_{ef} = \frac{P(+1) - P(-1)}{T} \cdot 100$$

Here, U_{ef}– indicator of efficiency; P(+1) – positive answers; P(-1) –negative answers, T – number of students.

Material And Method

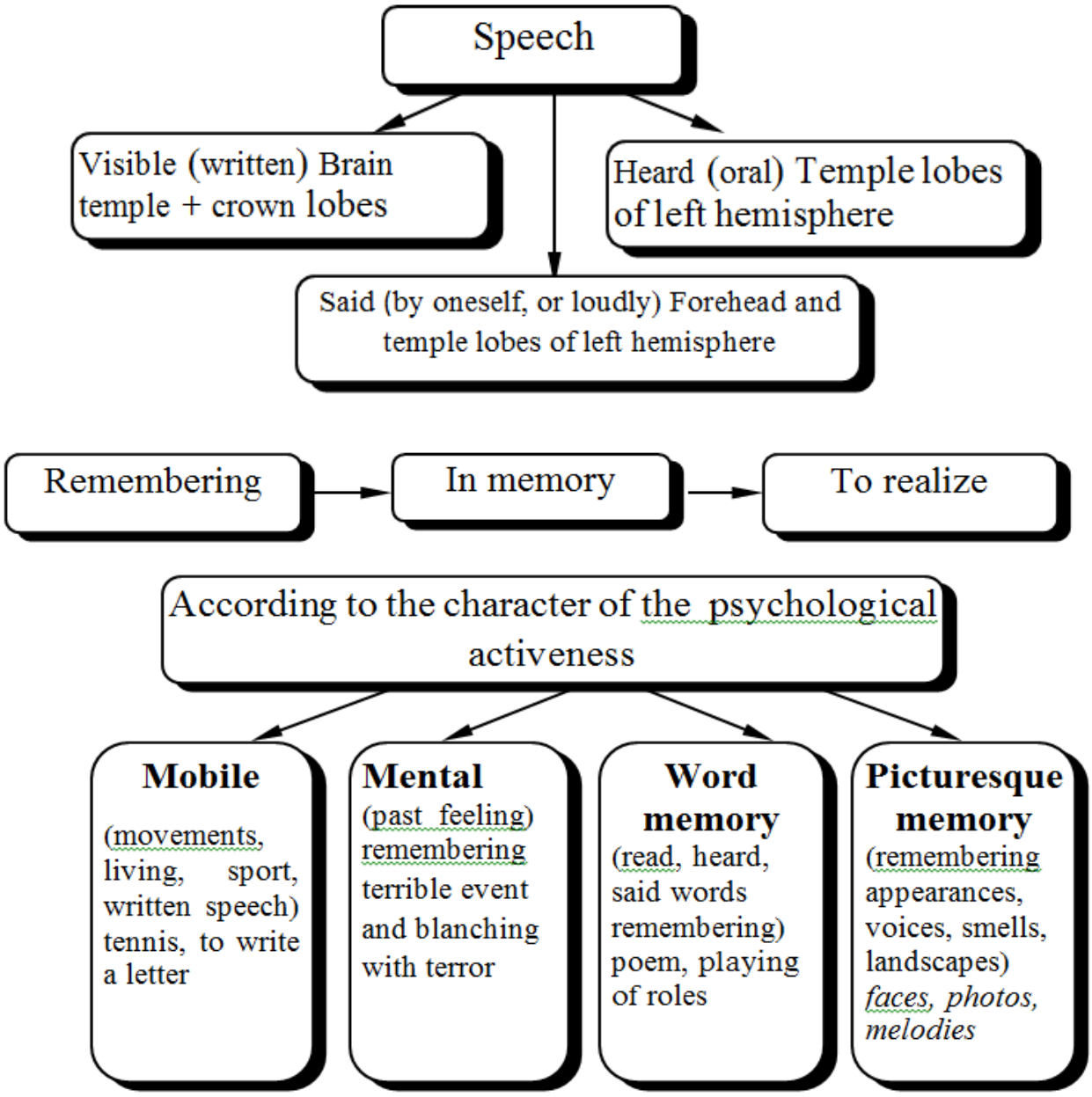
Comparing conventional experimental lesson with the one conducted with ICT, undoubtedly, we will prefer the second method. Because capabilities and advantages of ICT in relation to conventional method is noncomparable. But there are no capabilities and means in conventional method like in ICT. It is impossible to achieve such a rationality with just only board and diagram. In this regard "while teaching new knowledge without producing ready patterns to the pupil who are working over the tasks given by the teacher, he or she demonstrates independence in searching some new way, mode he or she "discovered" himself, or a method". And this is accepted by teachers, students and pupils definitely and they try to profit from the opportunities achieved from the informed society at most. Because the modern society put in claims the teachers not only to give knowledge, also to make maximum and efficient use of all efforts for developing of significant personal qualities of the pupils. Giving knowledge of the school mustn't be an aim, but it has to play a means role in the development of the personality. On this way information communication technologies open up enormous possibilities.

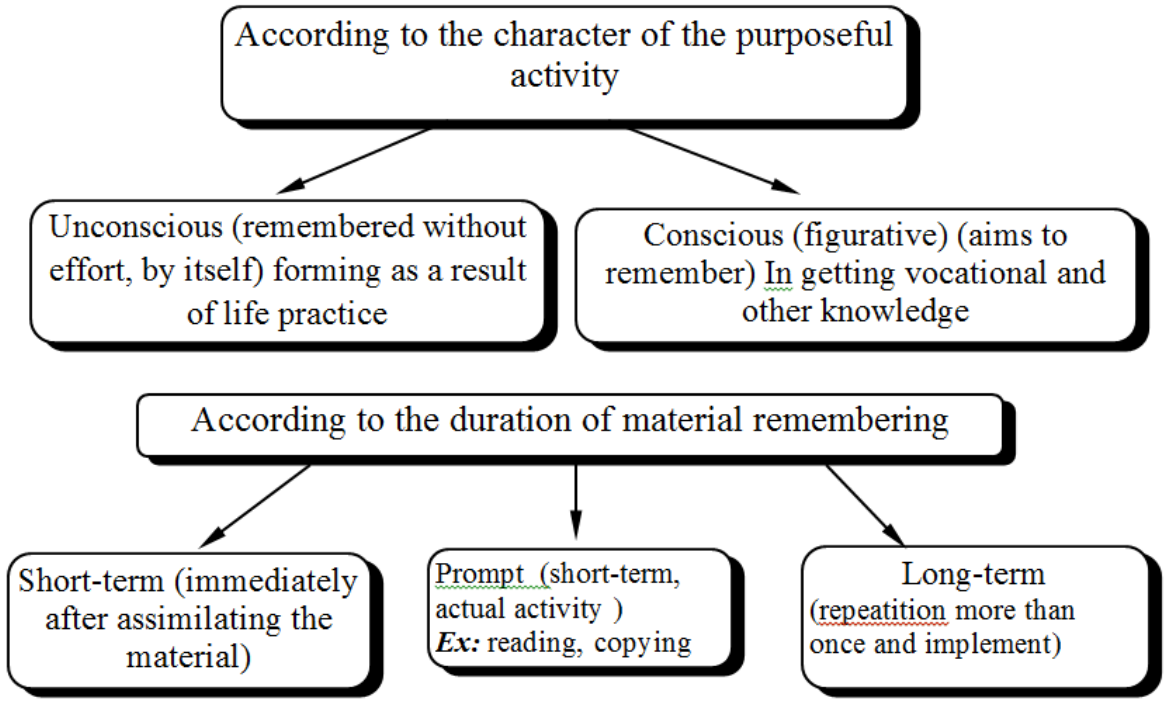
In Nakhchevan State University we carried out the lectures and lab trainings with the students of the "Biology" specialty with above mentioned method for some years. There is no need to say how much rational this method is during the teaching. Besides, in Nakhchevan city secondary comprehensive schools during experiments with students and other times of the investigations carried out, we put different experiments in experimental and control classes. Obtained results showed that relying on the conventional base, using new educational and

teaching technologies reasonably, the educational and teaching works of young generation can be established in more satisfactory level. During the investigations we observed that watching the pictures, diagrams related to the theme by computer provokes more interest in pupils. Because being an ordinary textbook a book can't give any additional information except standard themes. But it is possible to get more important and interesting information from the web sites, to use CD, to make use of different program packages and virtual educational processes. At present a wide opportunities have been made to improve the rationality of assignment of subjects by pupils using on-line textbooks at Biology lessons and out of school trainings. Because the on-line textbooks increase visualization by the wide use of new information together with descriptions. We have been witnesses that in the lessons we conducted with new methods, the pupils had more opportunities for perception, assignment, compare, repetition. For example, during teaching of Biology in higher and secondary school we decided to carry out a different experiment.

Experience

We prepared a lecture consisting of some tables and diagrams using internet for Biology teaching methodology subject for III course students on ""Biology" specialty. In parallel groups these themes were taught by defining control and experimental class [3]. That's in control class by conventional method, and in experimental class with table and diagram in slides. Teaching of "Features of high nerve activity. Speech, consciousness, memory, mentality" theme by interactive method with table, diagram.





To create conditions to apply their theory to the practical training, practical activity and their creativity should be evaluated by the teachers. In order the students to work independently, available conditions and resource base, educational-practical fields must meet the requirements of today. Just an international scientific-practical confrence on the theme "On-line Nakhchevan-1-9: the role and significance of information-communication technilogies in the development of science and education" held in Nakhchevan State University was devoted to the specific field – to the role and significance of information-communication technologies in the development of science and education. At present in Nakhchevan AR the higher and secondary schools not only have been computerized, but also they have been supplied with interactive boards and connected to the internet in order to conduct the education more qualitative.

Modern lessons must not be limited only with textbooks, class boards and teacher's presence. Conventional lesson forms don't possess an opportunity to give information and knowledge to the learner that can be given by information-communication technilogies. At the lessons conducted by ICT the pupils and students concentrate more, and all forms of the memory develop. Thus, the computer develops self-tution and self-education in the correct direction. To deliver the material by using a computer is accomplished by the teacher variously: presentation, on-line textbook, virtual training and lab works, tests, trainings, etc. At lab works by the help of interactive board, it is possible to display educationl film, to model, to get the students involved to the assignment of the material, to improve the progress and speed of the lesson.

Result And Comparison

In the teaching of Biology to check the efficiency of the use of ICT we organized independent work of students using computer, internet, different CDs, multimedia presentations during experiment at Nakhchevan city comprehensive schools. During the investigation we recorded different photos, diagrams, photos defining chemical and physical processes, interesting descriptions of plant, animal and human organs from internet to CD and took them to school. We suggested with teachers of Biology about the experiment lessons conducting and carried out lessons in parallel classes. At independent works the use of computer technologies is carried out in different directions. One of them is to use on-line textbooks and multimedia encyclopaedias for infotainment to the subjects. At these lessons according to the themes, in the on-line textbooks instructional cards made by the teacher are delivered to the students. On these cards they answer to the questions in the on-line textbooks, draw pictures in accordance with the theme of the lesson and write the data in the tables.

No	Groups	At the beginning of the experiment		At the end of the experiment	
		Control class	Experim. class	Control class	Experim. class
1.	Absolutely correct answers	3	4	3	10
2.	Correct only some of the answers	10	11	10	7
3.	Wrong answers	3	3	3	1
4.	Efficiency of the education (U_{ef}-%)	62	66	62	88,8
5.	Assignment (%)	81,2	83,3	81,2	94,4

The analysis of the task according to the fulfilment quality proves that during computer technology use at the lessons in the experimental class education, efficiency and assignment per cent were much higher at the end of the experiment. That's, education efficiency increased 26,8%, and assignment 13,2%. Therefore, prepared methodology gave its highest efficiency.

The analysis of carried out experiments show that in teaching of Biology the use of information technologies enable the classes to become individualized, which are one of efficient conditions in moulding independent working abilities and habits of the students, developing their intellectual level, yet increasing the scope of the taught materials and quality of the education. During the investigations was found out that watching to the photos, diagrams on the theme by computer arouses more interest in pupils. Because being an ordinary textbook a book can't give any additional information. But in computer it is possible to get much more important and interesting news from web sites, use of CD, make use of different program package and education process. For, in on-line textbook together with information, extensive use of descriptions increases the visualization. At the lessons we conducted, we were witnesses that the pupils have more possibilities at the lessons with new method for perception, assignment, comparison, and review. And the pupils were eager the lessons to be conducted by using these new methods more often. Having such kind of lessons develop independency inclination of the pupils, and enables them to advance self-reliant idea independently. The comparison of the assignment per cent and efficiency rates of control and experimental classes proves our views.

We also conform to the idea "Wonder is shown not by the computer, but by the teacher!" If the teacher can't exploit new technologies then, the application of technical achievements in the education is zero. Because no technology may substitute a human being, and particularly the teacher!

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