E-Learning and E-Pedagogy in now days

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Abstract

The main task of modern education, based on e-learning is developing and programming the creative existing forces in every individual. The fundamental problem of the teachers is “what can be done for stimulating students’ creativity?” The most important condition of stimulating the student’s creativity is the fact the teacher has to know what “being creative” means, to have basic knowledge about creativity, about the psychology of creativity, about the possibilities of developing it during the teaching process. The teacher himself has to learn to be creative, to give the proof of his own creativity. Thus, between the students’ and teachers’ creativity there is a close connection. In his activity of teaching-learning-evaluation the teacher uses strategies that are meant to cultivate the intellectual flexibility. This work presents a few of the methods that are used in Romanian schools in order to increase the students interest in learning physics. The methods consists in teaching, learning and evaluation with aided the computer. The students learn with the help of educational computer programs, real and virtual experiments, crossword puzzles and didactical movies. The evaluation is performed in modern way, the students are given tests that include various sorts of items, portfolios, projects, essays and graphs. By using these methods we assure the development of numerous practical and intellectual abilities of our students.

Keywords: Modern education, E-learning, Pedagogy

1. Real and virtual experiments

The study of Physics is based on the direct contact of the student with the reality, on the realising of real experiments. Although, in the last time they gave up realising real experiments in the place of virtual ones, because of unsuitable utilities of school laboratories, because of the fact that the preparation and the realising of real experiments uses time and didactic material, imposes protection measures for the students and for the professor.

Using the computer, the student doesn’t need to retain important quantities of information, only to think logically and to know how to bring under control the information he needs. Also, the student is motivated to learn independently, becoming a human being capable of self-education.

He can traverse the disposed material in a proper rhythm. The educational soft programs and editors allow a better agreement with the matter, in a short time; allow the implication of all the students in the study activity and a different approach of all notions in function of each student’s level of knowledge and intelligence. In the case of an estimate, it is eliminated the subjective character of human being, the student being protected by the whims of the professor.

Also, the students can modify very easy the conditions in which the experiment takes place, they can repeat it for a sufficient number of times so that they can follow the way in which the studied phenomenon take place, can extract by themselves the conclusions, can enunciate laws, can design and construct new experiments or can verify the solutions of some theoretical problems. With the help of the computer they can realise complex calculations in a very short time, can realise graphics or make papers.

Using the computer has also disadvantages like: the absence of very good soft programs, high costs (expensive programs), the absence of a specialised personnel and of adequate equipment, the resistance at
the change of didactic personnel, of the parents, of the students. Also, the educational soft cannot reply at all the unexpected questions of the students, so that, the professor will always own the most important role in education. The computer can cause the loss of calculation and investigation of reality abilities, the damage of human relations.

The real and virtual experiment must complete each other for giving students the possibility to compare the real system with the virtual model.

2. Methodological considerations

For realising this study there were chosen three classes of the 9th grade with general levels of approached character (chosen after the administration of some tests at the beginning of the school year). The classes are of decreased level to average.

At the first class the matter was traversed in accordance with the classic methods of teaching-learning. The theoretical notions were presented using the chalk, the blackboard, the manual and the problems gathering. The students have studied the properties of images in lenses realising the real experiment.

At the second class students used educational software, feigning the forming of an image (image of an object) through a lens.

At the third class the theoretical notions were presented in a modern manner, attractive, on the computer. The question: “Why lenses?” and the presentation of some applications of the lenses is mint to incite the curiosity of the student.

Figure 1. The applications of the lenses

This curiosity is amplified (increased) by the wish of knowing how did lenses appeared, how did they evolved. In the lesson is presented the history of lenses, then is given the definition of lenses and is realised the classification of them. There are evidenced the geometrically characteristics of lenses. It is explained why in the geometry optics are used the thin lenses and are established the equations of lenses. There are designed and constructed the images of an object through a lens with the help of the educational software and are given their properties. In the mean time are presented the real sequences filmed in the physics laboratory. These sequences make familiar to the student, the laboratory instruments and the way of work. Also, there are presented associations of thin lenses and the telescopic system.
Figure 2. The experimental device and the lenses
The settlement of knowledge is realised through a word game structure.

After the traversing of the lesson and the agreement of the notions, the students are challenged to resolve, organised in teams, problems experimentally. The tasks of work are worded in the following terms: obtain, project, realise without indicate the way of work or the necessary materials. In this way it was demanded to the students to determine the focus distance of a convergent lens and the focus distance of a divergent lens, to realise an experimental montage through which we can obtain a real, straight line image of a real object.

After the solving of the experimental problems which implied the realising of some scientific investigations, students realised laboratory papers and the conclusions were analysed in the class.

It was concluded the fact that the interest for the lesson was bigger at the students which used the educational software. Even the under average students set questions and took notes for different aspects in their note books.

At the class, where was used only the educational software existed some difficulties. Because not every student had minimal abilities for using the computer and being numerous classes, (in average 30 students), for one professor was hard to follow the way of work and understanding of the entire phenomenon by all the students.

The atmosphere was disturbed by those students who, not having sufficient knowledge in the informatics domain, got stuck. These shortcomings were reflected in the notes from the tests received by the students.

At the third class, where the theoretical notions were presented in a different manner, the performances of the students were much over average. They had the satisfaction of success and of obtaining some creative solutions at the experimental problems. The creativity of students manifested even when they had to answer at the question:” At what uses the realised experiment in day by day activity?” From the essays which the students presented in the following lessons resulted an important interest of them for the proposed theme. The cause can be easy infered: they had to capitalise their work, finding useful applications for what they have created and undertake.
After the application of the tests containing identical items were obtained the following results: The statistic dates were analysed with the program (Editor) EasyPlot. The conclusions are the following:

At the first class the distribution of the marks is roughly Gaussian, the average being of 5.50, a value which is in concordance with the waited aspect, the class being average like (as) value.

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Arithmetical average = 5.50
At the second class the arithmetical average is of 6.90, but an inspection of the dates reveals a double-modal distribution, which does not allow a correct conclusion on the situation of the class, even if it indicates a rise of the average in general. This aspect is in the favour of using the educational soft. The double-modal distribution indicates an inhomogeneous structure of the class. An important part of the students had a high average, 7.70 and the other part a low average, 2.3 which indicates the fact that these students didn’t had the necessary knowledge for using the computer.

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Arithmetical average = 6.90

At the third class the arithmetical average is over the average level, an element which indicates that using not only the real experiment but the virtual one, the team activity and the provocation of the students through experimental problems leads to the increase of the performances of the students and the interest for studying physics. The average (arithmetical average) at this class was of 7.80. Using the virtual experiment brings a benefit with the condition that all the students must know how to use the computer. This factor imposes the reanalyse and the restructure of the entire teaching system and the altering process of the school program (methodical elements and related factors/particularities) through the introduction of informatics hours at all the profiles. It should be worked with small groups of students or with two/three professors at the hour for allowing the simultaneous access of the students at the presented notions.
3. Results and conclusions

Although using the computer brings benefits, the student must not be transformed into a "robot" who knows only how to use it! The computer must help the student by offering him a source of reference material (informational material); develop his way of thinking, culture and creativity! In this way the students must be attracted, realising some hours in which they use not only the virtual experiment but the real one!

References