ORGANIC RELATIONSHIP ISSUES IN TEACHING CONCEPTUAL PHYSICS BY USING ELEMENTS OF THEORETICAL PHYSICS

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ABSTRACT

Developing students' scientific outlook and conceptual thoughts on physics is one of the crucial objectives of modern education. Achieving for this it is very important to understand clearly the appearance of psychological peculiarities of the awareness on Physics in the range of performance of knowledge. The role of psychological factors are very essential in gaining perfect knowledge, comprehension and skills. In this article have discussed the crucial issues on teaching Physics in secondary schools in accordance learners awareness connecting with real life experience.

Keywords: Conceptual Physics, Theoretical Physics, statistical system, statistical balance, lighting quantum.

INTRODUCTION

In the modern stage of the scientific-technical development special attention to be driven to the promotion of the awareness of Physics. Hence, Physics is the theoretical basis of all scientific disciplines as well as the practical basis of different sphere of manufacturing. Developing students' scientific outlook and physical thoughts is one of the crucial objectives of modern education. Achieving for this it is very important clearly to understand the appearance of psychological peculiarities of the awareness on Physics in the range of performance of knowledge. The role of psychological factors (attention, retention, abstract thoughts, capability, diligence, industrious and others) are very essential in gaining perfect knowledge, comprehension and skills. However, less attention is still been drawn to the role of psychological factors in teaching methods and techniques of physics. Every teacher should understand and know the consequences of these psychological factors in the process of educating and teaching and take into account in each lesson. It is true, that the content and process of education mainly depends on the level of students' knowledge, competency and motivation. Precisely these principles indicated the way of delivering them what, how and through what type of form, strategies and tools of teaching.

The thoughts, attention, retention, understanding, sensitivity, which is considered as the main basis of the awareness process and coherently connected with each other serve for acquiring whole learning material completely.

LITERATURE REVIEW

So that, as a result of designing learning materials according to the coherence principles we can achieve providing unique learning process and through this we help students to acquire the concept and content of the subject completely. Effective acquisition concept and content in terns opens the way to formulation and development of coherent memory.

As to the notion of N.F.Talizina the specific features of the process of acquisition related with its activity: for gaining knowledge student should obtain them, that is, they should use gained knowledge and comprehension in practice. In other words, the process of awareness always reflect by the students certain action. That is why, while planning one should define what, who, for what purpose and how they acquire the new knowledge and comprehension.[6].

Every organized and conducted lesson on Physics aimed at teaching, learning certain laws, formularies, definitions and postulates, as well as solving and finding feasible ways of systematic solution of tasks and problems, from simple to complicated mode basing on previous gained knowledge and skills. In the implementation, it is better learn above-mentioned concepts dividing into pieces and then acquire them as one unique system. It is clear that in the process of acquisition we are not able to provide completely progress of learning material if we do not provide a certain coherence and cohesion between learning materials. In the sphere of the subject of Physics, we should keep in mind that we are able to achieve our target aim if we provide the coherence started from formulating the elements of simple learning materials in students' mind to acquiring the whole topics completely.

Effectiveness of Education connected with the specifics of the assumption process (feeling, understanding, memory, thoughts and etc.). The results of a number of investigations done in the pedagogical and psychological spheres proofed this idea. For instance, the following legitimacies on successfully assumption on learning materials have defined by Ya.I.Grudnev:
1. Targeting to achieve completely, clearly, perfectly and systematically assumption of the materials stimulated to form various activities of thinking. As a result provided complete, clear, perfect and systematic memory behavior;
2. A large amounts of materials are not perfectly memorable in mind;
3. Understanding the essence of the material considered as one of the essential tasks of keeping them in memory successfully;
4. If the material is not understandable, it is not memorable in mind, but people cannot notice this or they believe that it has acquired in mind;
5. The dynamic thinking activity, directed to understand the content of the material provides keeping them in memory;
6. If the teacher organize the activities aiming at active thinking, it helps to acquire the content of the material intensely and due to this it keeps in memory effectively;
7. The techniques of increasing the action of active thinking as: making a plan, differentiating meaningful target parts, reconstruction of the material, comparing special elements, contrast, generalization, identification, classification, systematization, noticing the correction help to assumption of the material effectively in memory;
8. Revision allocated according to the time is more effective than corrected revision. [7].

METHODOLOGY

The first letter of each word in subheading should be capital Basing on above mentioned scientific views and the results of research works, we should state that for complete understanding and acquiring learning materials it is necessary to define aims and objectives, indicate key terms, which are required to be attained by the learners. For the purpose of effectively assumption of the material, it should divide into units, defining important parts and indicating theoretical and practical issues connecting to each other.

The existence of reflection, that is, if the learning results systematically monitor and evaluate the process of acquisition elaborate.

Likewise, if the new theme to be learnt complex, that is, if the previous learnt materials are the basis for the next themes and targeted the correlations between subjects, one can acquire the content of the material deeply and completely.

Students aware the content of the new material through analyzing previous material, targeting somehow his/her life experience. So, for strengthening theoretical knowledge it is purposeful to teach Physics integrating theoretical and practical issues.

The didactic consequences related with the benefits of teaching techniques of Conceptual Physics using the elements of theoretical Physics defined by the content and level of the knowledge, required acquisition by the students. Reforming the content of education has seriously influenced to the latest achievements of the science and education technologies as well as its optimization and fostering and deepening of attained knowledge and skills. All theoretical views related with elaborating the content of teaching directly concerned to subjects, including Physics.

Before defining the ways of teaching Conceptual Physics with the help of using the elements of Theoretical Physics, we consider to mention some ideas about the results of scientific-methodological research analysis done in this field and the content of the issues in the course of Conceptual Physics taught at the Higher Educational Institutions.

Recent years there are happened tremendous changes in the development of the science of Physics. Great achievements and development have been done in the branch of particle physics, plasma physics, microelectronic and basing on its achievements the new generation of computers, non-fiber optics, nuclear physics and quantum mechanics. According to this the achievements of the science of Physics have been widely used in life, medicine, industry and ecological fields.

For formulating students' scientific view on nature, it should be better start to teach the course of Physics by explaining the elements of the phenomenon of physical theories, which are familiar to them. Because of this the cognitive thinking abilities of the students is extremely developed. Choosing and presenting learning materials basing on the principle of unity around the common physic ideas has some advantages.

At first, it creates teaching the course of Physics by using Deductive Method. Secondly, choosing teaching materials in this way caused to increase the consequences of fundamental physic theories. As a result, students are able to define the reason of the phenomenon basing on their theoretical knowledge and it helps to raise their interest to learn the subject of Physics.

RESULTS

The strategies of elaborating methods of teaching Physics basing on theoretical ideas have given in the researches of M.Djoraev [2], V.V.Multanovskiy [3], V.Allakhunov [1], A.S.Shurigina [8] and others. Most of these scientific-methodological works the main attention to be drawn the issues on formulating predictive-statistical ideas in the senior class schoolchildren and students of the Higher educational institutions. In the same time, as to the ideas most of the methodologist scholars, late application the elements of theoretical physics and predictive-statistical concepts to the process of education caused not only to complicate the acquisition of the concepts in the course of Physics, but it makes difficult for its

formulation process. Teaching phenomenon in Physics and other subjects of science basing on the statistics technique has its specific features. By using this technique, the formulation process of theoretical ideas and concepts accelerated and appeared an opportunity for using them in learning other subjects.

At the beginning of the course of Physics the information about molecule, their action and interaction, mass of molecule. Pascal's law to be learnt as the proof and result of inaccurate action of molecule. The theoretical interpretation of physical phenomenon and process and the analysis of methodological investigations directed in introducing with the technique of predictive-statistical analysis shows the necessity of formulation the early thoughts of teaching Physics systematically and one by one. The results of analysis of manuals, textbooks, syllabi and methodological guides show the existence of enough materials on using the elements of theoretical Physics in the process of learning electrical phenomenon. In this process it is meaningful to introduce students with dynamic and statistical regulations from the beginning of the course.

In the investigations of M.Djoraev [2] indicated to add the concept statistical system in the range of given concepts for accomplishing above-given ideas. Statistical system means the system consists of "N" disorderly acting particles and stands in balance. The result of acting directions, speed, energy and temperature of the particles, which are formed the statistical system is constantly changed because of the disorderly collision, that is they have unexpected specific features.

The main reason of this, that it is impossible to tell the direction, speed measure and the movement of trajectory of the isolated particle beforehand. According to these features of the movement of particles, completely differ from mechanical movement. Due to this the necessity of using predictive-statistical ideas for studying regulations and features of particles to be appeared.

There are unexpected phenomena and events under the basis of this technique. According to their nature unpredicted events individual and public unexpected occurrences follow particular regulations and these regulations called statistic regulations.

One of the effective ways of improving the scientific degree of teaching Physics is to interpret learning materials basing on fundamental beliefs and theories. It is worth to stating that it is created an opportunity for solving pedagogical issues as formulating scientific view, improve the quality of knowledge assumption, developing creative, scientific-theoretical thinking in the same time covering several facts in the high level.

In the research work A.S. Shurigina [8] defined the role and importance of predictive-statistical ideas and methods in the course of Physics and she offered the version of molecular physics taking into consideration the terms unpredicted dimension, possibility, average statistics and fluctuation.

In this sphere the researches of M. Djoraev [2] are worth perceiving, he contributed scientific-methodological ideas concerning to strengthen the importance of possibility-statistical ideas on studying molecular-kinetics theory. In his research work he continued the researches as V.V.Multanovskiy [3], A.S.Shurigina [8] and presented his version on molecular physics. For instance, he offered to add the concepts "statistical system" and "statistic balance" to the basis of the of the theory, except the concepts that are known to the

students and pointed the basis of the theory consists of the following three principles as stable position, molecular disorder, the equal distribution of the energy according to the level of self-determination. He also stated that one can use them for making decision on quality and quantity.

In the history of Physics it is considered as an important innovation using statistical techniques to study characteristics of heat dispersal. It was a tremendous revolutionary event in the science of Physics together spreading the application margin of statistical and thermodynamic physics.

Planck [7] studied the heat dispersal as the receiver and distributor electromagnetic wave of the elements and applied it to the thermodynamics and classical electrodynamics regulations. He gave the following fundamental hypothesis:

$$E = n$$

Here - elementary energy, n- whole number. Elementary energy may be allocated vary rate on all resonators. From this, it is defined that special resonator doesn't come through any free energy, but it defines through the energy, which can multiply by.

In 1900, on the 14th of December Planck presented his new and very important news to the German Physics society. This event considered the foundation of early quantum thoughts. The quantum of energy expressed the feature of energy beaming can be discreet, that is electromagnetic energy pushes and immerses in isolated portions. The Planck oscillator can define through multiplied energy by 'h v' energy. It shows that electromagnetic energy can spread and immerse only in the form of portion. In this case the discreet of energy uninterruptedly connected with 'h' – unchangeable proportions (Planck constancy).

In 1905, A. Einstein in his work called "About heuristic view on formation and circulation of lighting" made his next discovery on the thoughts of quantum. He strived forward the ideas of electromagnetic beaming and discreetness as well as the following hypothesis "Lighting quantum" – as a common process of spreading and immersing of quanta.[9,5]

For development of the beliefs of quanta, there are two important points of Einstein on the lighting quantum hypothesis. At first, the thoughts about beaming that consisted of limited and unseparated quantum energy apt to the corpuscular theory of light. The second, because of such type of thoughts formed a discreetness of common process by spreading and immersing of quanta.

Doing thus, Einstein met with the corpuscular theory of light. Later this quantum theory of light led to the formation of corpuscular- dualism of wave.

DISCUSSION

Discussion of results/issues should be presented in this section. Font Size 12, Times New Roman, single spaced. All the subheadings in this section should be in font size 12 Bold, Times New Roman, single spaced. The first letter of each word in subheading should be capital. In 1916, Einstein in his work entitled "The immersing and speeding of light in accordance to quantum theory"[9] studied the problems of thermodynamic balance between boric atom and irradiation. Through possibility imaginations, Einstein gave his quantum conclusion to the Planck's law of irradiation

These works of Einstein are the fundamental works and they played very important role further development of quantum theory. Taking into consideration immersing and spreading of light appeared automatically by itself as well as its imposed occurrence, included the term transforming possibility. The important conclusion of Einstein: that immersing and inductive lighting was the equity of possibilities.

Those works were the significant step in transforming from Causative Law of Physics to the Law of Possibility from the methodological point of view.

Foundation and gradual development of thermodynamic and statistic Physics based on quantum concepts logically connected with the presence and development of quantum and statistics Physics. At present, the quantum statistics becomes the basis of the knowledge on the regulations and process related with the substance property and scope.

Actually, the result of the wide development of science the term "the wave of the universe" exchanged the term "the possibility of the wave". Possibility based interpretation of the function of wave specifically reflects the unpredicted state of the micro-object. In this case there needs to define the possible state of the micro-object, that is pre-prediction in the Quantum Physics characterized with its possibility. So, Micro-object Physics implies by statistical theories.

Nowadays, introducing the elements and the statistical thoughts of modern physics to the content of the Higher Education, formulating the awareness of making conclusion at the level of fundamental Physics theories plays an important role. For solving this task, it is necessary to include the elements of theoretical Physics into the teaching process.

Besides, here one should take into consideration specific features of the methods on teaching Physics. It would be better that one should always remember the consequences of formulating the basis of scientific view in teaching Physics. The discipline of Physics occupies an important place in spiritual and ideological education of learners.

CONCLUSIONS

Conclusions of the study should be given in this section. Font Size 12, Times New Roman, single spaced. All the subheadings in this section should be in font size 12 Bold, Times New Roman, single spaced. The first letter of each word in subheading should be capital. Summing up we can note that the methods of teaching Physics have a particular significance in forming scientific outlook in the process of learning the subject. The terms of Physics, physic regulations and scientific theories are the main elements of the content of the subject of Physics for formulating scientific view of learners. It is natural, that this knowledge system logically connected with each other. For providing effective assumption of physical terms and concepts, it is very important to effective organization and monitor the teaching and learning process of formation theoretical concepts on physics and their acquisition

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