The presentation of physics knowledge via historical and modern access

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The summary of physics education on the rather types of school must to reflect both historical boundary stones of science and fashionable ways of nowadays physics. From the practice view, the presentation of modern physics is in time delay, in worse situation is absent. Many times we say that our study programs are full out. On the other hand, many very interesting research results, which are useful for better understanding of modern physics, or physics generally, are only in the mind of scientists or physics teachers. It is said, not overcome impediment mostly on the secondary grammar school, is fact that the modern physics is very pretentions for students understanding. However, is it not in some situations only reflection of reluctance to find another method of presentation new physics knowledge ?

Every experienced teacher knows, that we can to build modern physics idea only on basis of good knowledge of classic physics. Full of feeling understanding needs time, space and good teaching methods. If the students must understand physics terminology, physics laws, principles... they need positive relation to problems and solving of physics tasks must have motivation function for them. Only interesting and creative working atmosphere will be helpful for good student's understanding of solved problems.

During last few years the subject with humanity orientation are fully in development. There are especially economics, justice, languages, ecology... In together with this positive progress I must say, that the number of students which are interesting in physics go down. The changing of student's profession orientation is cause of decreasing of interest about physics practice, solving physics problems and in continue the number of school physics hours also decrease.

One of the feature of applying democracy and humanity in education is interest about students own needs. If we want have good results in physics education, in today's situation of decreasing of interest, we must better to apply rather teaching methods for knowledge transfer to students. We must to attack in together with student's area of interest, create for them creative subject with contents which reflect physics as a science.

What is the student in nowadays classrooms? Today's student is surrounded with modern technical aids. Daily has in use infrared control, CD player, microwave cooker, TV, video, he is reading journals, listening radio and watching TV which are full out of information. All modern technical support, in back with work of many physicists, are in centre of student's interests. But for today's lifestyle is typical only surface studying of using technical aids. I feel that teacher must to show students how to discover the wonderful life of physics knowledge inside technical support and in everyday surrounding life.

Many of students, in together with their humanity orientation, have better relations with history, philosophy, as with physics. Historical facts have strong impression to students conviction.
I may to say, we have a very sensitive students, which watch their surround, with mostly humanity orientation and with wide area of interests. In centre of my work is to find the interesting and creative type of presentation physics knowledge with idea of good understanding of physics principles.
On basis of my own experience in teaching of secondary school pupils and university students, first of them have a positive relations with history and second one are interesting in physics, I show some examples of presentation of physics knowledge via historical or modern access.

Example:
The first observation of magnetic field around the wire with electric current was held by H.CH.Oersted during his lecture in 15th February 1820. Many times this discovery is presented as a stroke of luck. I also explain this experiment only with simple wire with current, near with compass, but I am talking also about Oersted work on this problem from 1813 and about his bad experience with practical experiment. This historical and human access is good acceptable by students.
Example:
Historical list is many times useful for great esteem of some part parts which are in first view very simple. In part " The surface quality of liquid " I used historical access. The list of physicists which had part on research of this problem. gives big authority and esteem. For continue and nowadays use I show some works of today's physicists.
Example:
The usefulness of come back to history was frequently proved in practice. One of my concrete example of this idea is using of example of " Perpetu mobile " and their role in history of science. Students may to recognize many types of perpetu mobile, the principle of their structure, why they are not " perpetu ". This access was applied during final repeating of law of conservation of energy. Students were grateful and try to draw their own perpetu and discuss about it for a long time.
Example:
With target to show a big step in science and technology which is based on physicists and engineering work I usually compare technical support and their facility in past and now. Really, many times better results are sources of great esteem for scientists in students minds.
Example:
But this is the area of presentation of modern research results in science.
I know that the printing of school books is a long period process. The teacher must find another way for presentation of new research results in science.
Very useful and creative for students is work with students projects. They may to prepare own opinion on some physics problems. During free time they discuss about their problems with me, I give them rather materials and during teacher hour student's groups presents own projects. In practice, two groups solved the same problem and must confirm, which solving is better.

By this way students prepare projects about alternative sources of energy (solar, hot water, wind ... energy)
Very useful for students was discussion about own project with name " Nuclear energy ". They known some types of nuclear devices and present own opinion on this problem.
Many students are interested in next medicine study. Interesting for them was project " Diagnostic methods in medicine " (Rontgen,CT, MMR)
Everyday using of audio and video tapes was interesting basis for project " The quality of audio and video tapes "The final result was table with comparing some type of tapes by ratio of price/quality.
By this way student creates own subject as very creative, interesting and usefull one.
As a external teacher on secondary grammar school I am teaching in class with wide teaching of languages. Because, we haven't correspond books for this type of students, I prepared studying texts in English language for physics teaching. This studying text contains modern physics problems, classical physics experiments, solving problems and quantitative and qualitative problems from surrounding life.
These two types of activities, students projects and studying texts, I want to present modern physics on the secondary grammar school.
My own experience are in together with idea of using historical access in physics education, their good influence on students understanding of physics problem and their better relations to physics.
On the same time I may say that innovation of studying materials with modern physics results, which are around students everyday, has creative role in their physics education.