



Teaching Method

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Abstract: *The human being started as a self-educated person, this way managing to improve his living. For his descendants to avoid failures, he started to share his ancestors' experience. When some people's knowledge acquirement became big, they were called the sages, and among of them became eventually teachers, that took the role of transmitting the useful information related to life environmental conditions they lived. In time, their needs became more and more complex and their knowledge deeper. In the act of teaching itself, teachers create a shortcut between necessity and solving it, going beyond failures. Obviously, the present society is technologized, where the human being uses technology but he also searches for himself. This quest should be naturally performed with the help of the educator, of the experienced student, so that he could shape the young man and make him feel good with himself and find his place within society. The current education system describes to younger people nothing more than the evolution of science, technique and art, starting with the first trials till our days. What is really mandatory for us is to find a way where the educational system could become again a necessity for a person and not a way to keep very many people busy, while they can be intellectually and psycho-emotionally shaped.*

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I. The first issue raised by the society when any reform starts, is the economical one. Any government will be interested in making the educational system efficient, financially speaking. For us, the ones who educate, this process means firstly integrating the young man in the society and also developing the technical, scientific, artistic skills he has been endowed with.

Although we think that we can obtain a financially efficiency, if we consider what will be essential in education of a youth. A possible solution would be the identification of the real conditions from which the child

education starts and avoid learning of some notions or practices which he is already familiar.

In a developed country the child who is already studying in a school is handling a remote control, him finding it very easy to press a button of a remote control which is in his hands and then move something from the distance. This kind of child will not be interested in Maxwell equations, but he would like to find out how he can move things with a remote control.

At the same time, in high school at Maths he studies differential calculus and even differential equations, these notions being useful only for a small part of graduated students, that is for those who go to universities. This academic approach of the themes, requires:

- a long period for study (in Romania 12- 13 years of studying until going to a university)
- teachers who are super-specialized in each artistic/ scientific field so that they could manage the informational challenge
- practical learning should be disfavoured to the phenomena they study.

In conclusion, too much money is needed and the results obtained have a low efficiency.

II. A social issue is represented by inadvertently between the development of the individual in the social context and the form in which the education is implemented.

Precisely, ever since he was a child he has been in the centre of attention, his position and opinion in the family and society are important to everybody around him. Then it starts the assisted education with specialists, where there is a desk with a teacher and he, the child, is in front of the teacher. This situation can be assimilated to a battle field where the two sides are ready to confront each other. The respect of the child for the person in front of him comes firstly from the social position and then from the effect of providing information, meaning the education itself.

A potential solution could be the one suggested by the Finnish educational system where the formal organizational style of a class is dropped and besides this they apply the pattern of a class with a smaller number of students (currently in Romania the maximum number of students is 28-30 and the minimum one is 15-18.)

How students sit in their desks is important for their socializing, precisely their team work and the furniture must be chosen that way so it can be easily re-arranged due to the suggested teaching activities. The actual arrangement implies from the very beginning selfishness. A desk with one single student, apart from the rest of their peers is a viable solution in case of a student towards the end of his adolescence, when education has as a main aim acquiring exact information in a field. Also, the classroom, by the way it is arranged, has to create a warm background emotionally speaking. Visual stimuli have to be considered when arranging the classroom, what colours determine what moods. The main message that has to be conveyed to the student is that he is in a familiar environment, where he can express his wishes, his misunderstandings, without reservations.

III. An essential problem of the educational system is the existence of inadequate motivation of the student. The student has as a motivation acquiring good scores (this comes from the society: what being a successful person means) and also acquiring certificates, diplomas from various institutions.

1. The motivation of the student in relation to learning should start with exactly the answer to his necessities.

Precisely, in Physics, when teaching each subdomain (mechanics, optics) we start with initially discovered and analysed elements and getting to the scientific rationale performed by our ancestors, until the 20th century.

Besides pure learning notions of mechanic, optic can't attract a scholar, it creates the feeling that things are already at the end of the road, in the meaning of knowledge.

We started from burning down ships with the use of the concentrated sun light, and we ended up destroying cities with a single laser ray from very long distances. What else can I do, as a young man? An option would be that the rationale be differently built. The topics to be taught should be structured in issues useful to deploying and understanding life within the society we live.

At Physics for instance I would not have to teach about electricity and magnetism, I would have to solve for my descendants the problem of energy sources, how to store energy, the issue of miniaturization of transformers with which I am charging my phone.

At Maths, we wouldn't have studied recurring strings, then understanding the biological structural rules. We can also find the convergent or divergent strings in biological themes (like snail shell or the ratio of the parts of the human body), in art, painting, architecture.

Essentially, we could start from the necessity to the knowledge he already has and this way we could show him what else he has got to solve in that domain. This way the students are not simple spectators, but they could also become the ones that solve the problem.

2. A second aspect as important and motivational as the first one is that during the entire school the student develops both emotionally and intellectually. Actually, all the student studies have to be in accordance to his development. That is why the choice for his subjects at school should be in accordance to his psycho-emotional development.

From our 25 years of experience working with student aged between 14 and 18 years old we found that the majority of scholars have interests regarding the outside world in the first years of high school.

He tries to understand why the things around him happen one way or another and he is convinced that he is capable to make them function better. These elements need to be considered when making up the curricula and also the way the scientific content is presented.

The courage he expresses that it is him who can make things better is an ability that can be channelled towards the real problems of the present society, problems that can be solved with his help.

During the last years of his high school he starts to notice his emotions, his feelings, he wants to socialize more, carrying more emotions. However, the student becomes the centre of his universe.

This is a reality that we, educators, can exploit in his best interest, making him understand what this social aspect means. That this aspect is something society enjoys very much when he has to offer so much We have to make him aware that this force he has got consists of opening himself to the world, being open to know more and to offer more.

IV. A methodological issue is that of teaching the scientific and technical subjects. Considering that in Physics and Maths we operate with quantity and not quality, teaching these subjects is based on pragmatic needs, forgetting that the student develops all his life both intellectually and psycho-emotionally.

This development segregated between the intellectual and emotional one is marked by the bell ring that separates the Maths/ Physics class from the Music one!

From our experience we noticed that any technical piece of information is emotionally loaded, this is more efficiently remembered and used by the student, this way having the possibility of enlarging his knowledge. For instance, at Physics: the collision' study is getting a different meaning in student's mind if the phenomenon is presented like a billiard match between Alex and John (two students in the class where we teach).

Any notion, physical quantity can be loaded with emotion if brought from the abstract area to the concrete one. Even a notion as the flux itself that defines the density of section lines that fall on a normal surface makes sense in the student's mind if that very surface is the student's body and the section the surface «feels» is generated by the star gate from the very film Stargate. When it passes the gate his body «feels» the density of the field in relation to the «strength» of the field and the angle that penetrates the field. Just the same happens in mathematics, where we clearly start with the sensation that we are working in the abstract without true support, but we can fill in the information with emotion.

Defining a recurring series can't represent a need of the individual. The Fibonacci series represents a reality of the true proportions of the various parts of my body, is a reality of the way in which the shell of a snail formed, so you can start from these realities and go afterwards to recurrence of series. For terminal classes at high school things can become more complex. "Personalizing" phenomena, can have not only a reflection in nature of the theories but also a psychological, philosophical one. Having a point of view means having some frames in relation to an analysis made in case of some events, moods, situations. Also defining a Reference System means defining spatio-temporal elements that help us define the status for another object or event.

From here we can realize physical and mathematical approaches that can make meaningful relationships reflected in the surrounding nature, but most important, that can have a reflection in the consciousness of the student. The joy of feeling what it means to understand something, is beyond everything and it is a joy that we think we need to transmit to our students. We should convey to students our joy of feeling beyond knowing. The educational system has many general issues and obviously specific to each country. Its change will be decided finally by the negative answer of society to our efforts, the teachers'. What way it will choose depends on what we want from tomorrow, on the responsibility we use for this thing and on how objectively we look at today.