

10th International Balkan Education and Science Congress on the topic of “Education and globalization”

University „Ss.Cyril and Methodius“-Skopje
Faculty of Pedagogy „St.Kliment Ohridski“-Skopje
Macedonia

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Education and Science
„EDUCATION AND GLOBALIZATION“

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10th International Balkan Education and Science Congress on the topic of “Education and globalization”

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Snezana Todor Stavreva Veselinovska*

How to bring school closer to students, how to tailor school to them

Abstract

This paper analyzes the issue of how to bring school closer to students and how to tailor education to them so that they are able to present themselves to the world when they finish school, and communicate with it. The purpose of this study was to find the applicable reformist methods of teaching biology - methods that will make biology lessons look like creative workshops. For this purpose, nine semi-structured interviews with experienced teachers of biology were conducted.

UNESCO's Conference on Education in Paris (1997) clearly set educational goals, and that is that students need to acquire applicable knowledge. However, the new European educational system, which seemingly offers innovation, proved to be completely different; it gives priority to the form rather than to good content and orientation towards solutions. Evaluations of students from the year 2012 show that there is too much statistics in biology, and unnecessary obsolete data and information.

The project "Computer for Every Child" is one way of adjusting the manner of presentation to children. In this way, parents do not have to tell children that the computer is not good for learning because it interferes with the child's working routine. However, none of the teachers showed pleasure in the experience of replacing frontal communication and group presentations. Good thinking skills cannot occur in a vacuum, there must be something to think about. And the nature of scientific research imposes certain limitations on the process of solving a problem because everything is controlled by variables that are considered prestigious, and in social sciences ethics and aesthetics are essential where the art of deduction plays an important role.

The study included 9 biology teachers (3 male and 6 female). In this study, which consisted of a 120 minutes long interview teachers were first given a list of 10 strategies and then they were encouraged to add a new strategy. They were asked about what their goals in teaching

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biology were, and what their experience in teaching was. Teachers mostly agreed on the need for systematic leading of students so that they work out the solutions of the problem on their own. Among the interviewed teachers two different poles in thinking were noticed - pessimists and optimists.

Although these were all teachers with experience, the authors conclude that the fact is, that although biology is considered a well-developed science, in Macedonia it is taught very differently by different teachers. The educational reform must be based on well-defined strategies for teaching that all teachers can incorporate into a common curriculum.

Key words: *biology, reformist methods, teaching biology, systematic leading.*

1. DO WE LEARN IN SCHOOL HOW TO THINK

Firstly I would like all of us to ask ourselves the question: "Do we learn in school how to think? ".

The question implies an answer to the basic problem: first of all we need to determine what "to learn how to think "specifically means.

In my opinion, the root of many misunderstandings is the tendency to identify two different terms almost as synonyms and these are "thinking" and "cognition".

The opinion that "to give knowledge" means the same as "to teach how to think" is generally inculcated in our minds.

It is true that learning encourages a skill to learn, but this is still not about automatism that would lead to the development of mental abilities. If the original meaning of "to think" is to carefully "contemplate", to "ponder upon", we should ask ourselves how much space in pedagogical practice is scheduled for this important exercise. The introductory question will become even more important if we take into account the fact that our young people today use a sea of information, but are at the risk of being overcome by such an abundance of information, if they have not already been overcome.

Perhaps the greatest challenge of our contemporary culture refers to the complex world of data which requires professional use of the process of selection, analysis and synthesis of knowledge. It is a very important issue that depends on something more important: moral issues, choice, use and management of cognition.

It is not, then, just about learning and cognition, but also about the ability to direct one's thoughts towards wisdom and constant search for what can improve human living conditions. The ability of questioning ourselves, finding the answer to the issue of good and evil, trying to promote something or avoid something so as not to fall into the trap of

insanity, all these represent the real activity of the mind looking for a sense of social ethics direction in which we should move. Because of this we should all feel called to consciousness because of the fact that young people are exposed to the hazard of easily gaining "the habit of stupidity" and negative opinions if our educational communities overlooked "the skill for studying real intelligence."

2. TO LEARN HOW TO THINK FOR A WELL-FORMED MIND

One might ask: "Can a person study the ability of thinking?"

In order to answer this question, we need to admit that we live in a complex world that is undergoing rapid change. That is why it is not possible to gain all the knowledge and get answers to all the questions that life imposes. Then, the ability to think gets greater importance to the extent when teaching or learning the ability of thinking and the strategy of thinking could become a basic discipline that will be introduced in schools.

How can you learn to accurately perceive things around you? How to reorganize information? How to learn to abstract and to control the mental process? The ability to analyze, control, and reorganize one's own mental processing that are required in the process of creating knowledge are some of the capabilities that can be effectively studied.

In this sense, ever since the seventies of the last century, interesting didactic programs in different cultures have been set. There are two basic assumptions of these formative research programs:

- The importance and the constructive role of a personality in the process of thinking;
- Evaluation of the ability to think as a personal discipline applicable in different contexts – education in school and adult education.

For studying it is primarily necessary to "learn how to learn" and this applies not only to the method of teaching, but rather to the processes of construction and deconstruction of mental schemes.

As for this, I think it is important to stay shortly on one aspect that directly deals with cultural and intercultural issues and processes. A simple example of this today is the so-called "challenge of globalization. "Faced with dramatic issues attacking mankind - manipulation with information, poverty, wars, various forms of terrorism - we should primarily make sure that the biggest danger are not wars or various forms of terrorism, but rather the difficulty of changing our traditional mental structure, i.e. consideration of the relationships between communities, the composition of groups, systems, peoples, economy, culture, and policy. Often it is a dramatic problem: it should be responded to carefully taking into account the ethical plan and disclosure of curiosity on the intellectual plan. Of course, all of this has

to do with the ability "to know how to think", but primarily with moral issues and civilization choice.

In the beginning it is necessary to understand that changes do not apply only to the "others" but rather to our selves, i.e. our "old maps" are no longer operational today. This is not a random logical operation, but an essential, unavoidable condition necessary for broadening our horizons and heart and turn to solving problems which involves considering the problem from many aspects, to get rid of all manipulations, prejudices and superficial generalization and to be guided only by sincere respect for the truth.

The next requirement for broadening and opening of the mind is to get rid of the arrogance about the size of our opinion in relation to others. It also happens very often that in families, schools, our communities, and in politics the use of this model is strengthened. We rarely manage to imagine and think in a manner different from our learnt schemes that are beyond our borders for a history that is different from our own.

I am sure that in the world there is no country, a region, or a better country than the one we live in and a really good place is where we learn that there is no better place for growth and education. I call this place "perceiving things from many angles."

3. THINKING AND LEADERSHIP OF "INNER TEACHER"

3.1. Centralization of a person and self-confidence

There is a problem that I want to share and which in my opinion represents of main prerequisite of basic pedagogy and which precedes any other educational program: **to treat students as persons**. During the emphasized collectivism of the mass media, to reaffirm this priority is not only pedagogically correct, but it is the re-establishing of upbringing itself. If you call upon of ability of thought, the idea of a "person" seems even more important, and grounded in the idea of freedom, self-awareness and autonomy. It may be said that "to be a person is the greatest achievement of nature."

But for an individual to be a person, he/she must be placed in the center of his/her being. A person has the ability to penetrate into the heart of his/her **Ego**.

Persons are those one who have the ability to penetrate into their experience and acquire knowledge about themselves and their actions. That is, each content has meaning if it makes sense to the person, i.e. if any content actually acquires any meaning that makes sense for the person, or if it is implanted as a vital element, "if it tends to get closer to our reality and the construction of our internal being ", and it moves a dynamic process of intention and zeal of our **Ego** focused on "must be".

Furthermore, if on one hand the school gives real value to the development of perceiving abilities, on the other hand, we should

give new dignity and new spaces of upbringing, intention of "awareness", and "matters of reason". We are an integral part of the society which is learning and which would also need the development of self-awareness. It is necessary to try to integrate the center of logic with the center of method in terms of active dynamics of the mind and consciousness. So, the method as a personal venture should include an evaluation of the subject as a conscious person who perceives, examines and surpasses itself, and is open to itself and to the world.

3.2. Teacher as a role model

An open mind is active and curious, it constructively faces difficulties, errors of personal and global constraints. It is a mind that knows how to listen and is always able to walk on new pathways and generate new situations. In doing this, it is a constructive, skilled strategist who does not back out in difficulties and is not afraid to "start again." Many young people hold on to their success, thanks to the constant justification received from their educators who find the right way in every change, even at spiritual level. The art to know to start from scratch is based on an irrevocable condition: the reincarnation of ourselves. The educator who transmits this force knows how to use all situations. He/she leads young people in situations in which they can actually face the experience of limitation and the perseverance to "overcome" this limit, to fight and to "swim upstream". Educator is the one who constantly encourages young people to pursue a constructive sense of life. He/she not only leads them on the path of cognition, but also encourages them to compete and be fertile, cunning in the strategy "to think well" with an unspeakable and persistent desire to "do good", not as an instrument of domination over others, but as a means of change and helping their neighbors.

That is the real teacher of thought and culture because he/she is open to continuous pursue of what can contribute to the improvement of unity among people and nations.

4. WHY THINK?

If we follow up on the initial ideas, or if we go back to the main question of this paper, you might ask: "Why think? "And what is "the sense of thinking "? These matters may seem trivial in their simplicity which disarms. The question "why think? "Brings as clear and disturbing answer as it is the case with the question: "we think in order to exist", not in the simple meaning of "existence", but in the sense of self-reviewing and overcoming oneself. It is a long and often a difficult road to search for truth, as claimed by Hegel, for the love of truth. If that road on one hand is the process of research and personal reflection, on the other hand a person lives from internal-external circulation between himself/herself and the world, and it is like opening the spiritual eyes in an ongoing dialogue with others. Will the school know how to accept this

challenge? The starting point is the potential of intelligence and the fact how good and qualitative the solutions to the problems of youth and humanity are. We cannot let young people tackle the bewildering globalization on their own. It constantly seeks men and women who possess a deep awareness and have great fortitude and will for positive action, who can lead a dialogue, who are able to think together and create, who know how to recognize the "signs of time ... and in deep darkness notice many indicators that widely revive hope...". You need to have the courage to open your eyes and the eyes of our young people to hope and to constant desire for change. If we, educators, first know how to encourage and nurture a culture of good and positive will, we will not leave our youth alone faced with the challenge of knowledge and risk of danger. Thus, all mankind will re-open to hope because with wisdom it will know how to use the potential of thought.

Questions like what constitutes good thinking or how to foster students' thinking in school in general, and in science lessons in particular, have been increasingly discussed in the educational literature over the past few decades (Beyer, 1988; Costa, 1985; Glaser, 1984; Pogrow, 1988; Sternberg, 1987; Zohar, 1999, 2004a; Zohar and Dori, 2003). Resnick (1987) suggested the concept of 'higher-order thinking,' which avoids a precise definition of thinking but instead points towards some general characteristics of higher-level thinking, as follows: higher-order thinking is non-algorithmic, complex, yields multiple solutions, requires the application of multiple criteria, self-regulation, and often involves uncertainty.

Costa (2002) mentions two advantages of infusing the teaching of thinking skills into teaching science. First, skillful thinking cannot be performed in a vacuum – there must be something to think about. Second, the nature of scientific inquiry imposes certain constraints on problem-solving processes; scientific problems, in which the control of experimental variables is paramount, differ from social and aesthetic problems in which ethics and artistic judgment play a significant role.

5. METHOD

The study involved the participation of 9 biology teachers, 3 females and 6 males, most of them having over 14 years of experience in the teaching profession. This enables concentrating the discussion on the knowledge and attitudes of teachers having a common professional background while reducing the influence of factors related to the differences between the disciplines or the diversity of the population served by the schools. It is also worth mentioning that the study addressed the teachers during their regular work throughout the school year, rather than under special circumstances, such as teaching a new curriculum or participating in an in-service course.

The interviews, which lasted about 120 minutes, started out by presenting the teacher with a list of 15 strategies often used in teaching

biology, such as formulating a research question, controlling variables, or drawing inferences from an experiment. These instructional strategies were selected from the current literature on biology education and materials used in teachers' courses in Macedonia. The interviewees were asked to comment on each strategy, for example, the extent he/she uses it in class, its advantages and disadvantages, or where he/she had learned it. The interviewees were also encouraged to add additional strategies they knew or used. The conversation, however, did not adhere to this format but rather developed into divergent directions according to each teacher's interests or preferences. The participants were asked about their instructional goals, current and past instructional teaching experience, or attempts to make changes. The interviewer, the second author of this article, has herself been a biology teacher for about 10 years.

6. Discussion

While teachers' explanations as to how or why they use a specific teaching strategy refer mainly to educational practices, the reasons they give for maintaining conventional teaching give us a very good idea about their perceptions of reform-based science education. Beyond the common claims that the obligation to convey mandatory content does not allow enough time for more progressive instruction, the teachers mentioned other reasons for continuing to use traditional teaching. Two interviewees perceived the development of thinking as an issue separate from the teaching of biology, and suggested providing students with special courses to foster thinking skills. One teacher said the following:

“It is necessary to include the learning of logic in the curriculum. This is important.”

Other teachers believed that the mere teaching of biology develops students' thinking, as the following quotes show:

“Nothing develops thinking like biology, for example graphs, his is abstract thinking, it requires concentration...solving problems...understanding concepts like energy conversion.” Or: “It's easier to develop thinking in biology because you have the tools to do so. What are the tools of thinking? You have a collection of principles and rule... you use them to solve a problem or a conflict... therefore this discipline, biology, helps to develop thinking.” Since, as we have already mentioned, biology is commonly regarded as a difficult subject, when teachers in the current study talked about fostering thinking by teaching the subject matter, they probably took into account students having relatively strong scholastic backgrounds. Another argument used by the teachers in their preference for conventional teaching was that the intensive delivery of subject matter is necessary in order to control the class:

“In today’s situation, if you stop teaching you lose control over the class, the students start talking.” Or: “If I had a quiet class I could hold more discussions. In our school, discipline is a problem. In a class that has discipline problems, all you can do is to teach technically.”

And also: “Since the students lack the culture of discussion, it is difficult. They start shouting at one another and so it is a waste of time.” Three teachers specifically stated that they felt insecure in using compound instructional strategies, as illustrated below:

“I don’t like discussions... I don’t know where they lead and I don’t have the tools to deal with this later. In discussions, they the students sometimes exaggerate, so then what do I do?”

7. SUMMARY

This study aimed at exploring the practices and beliefs that biology teachers have about introducing reform-based instruction into their class. Although all the participants in this study were experienced teachers, and the fact that biology is considered to be a well developed field in R. Macedonia schools, extensive differences have been identified among the teachers in issues such as the use of rich instructional strategies in the class, their self-confidence in utilizing progressive instruction, and their beliefs about their students’ abilities to develop higher-order thinking.

Therefore, despite the fact that the constructivist view of learning has been placed at the center of teachers’ pre-service and in-service programs for at least two decades, teachers often regard reform based instruction as an idealistic view of education rather than a clear schooling practice. The significant diversity of the teachers, as well as the cases in which the teachers highly evaluate their students but show moderate or low self-confidence in their own abilities to teach higher-order thinking, indicate that many teachers are confused or embarrassed about reform-based instruction. Further work is therefore required in teachers’ pre-service and in-service training to make the fostering of higher-order thinking a common ingredient in science teaching.

We summarize this paper by noting two examples of approaches to foster thinking in the science class to emphasize that the notion of reforming science education must be translated into well-defined instructional strategies that teachers can infuse into teaching the common curriculum. All this will contribute to school being closer to students so that they could adjust to it and to teachers as well.

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