COGNITONICS AS AN ANSWER TO THE CHALLENGE OF TIME

Olga S. Fomichova (1), Vladimir A. Fomichov (2)

(1) State Educational Centre "Dialogue of Sciences",
Universitetsky prospect 5, 119296 Moscow, Russia
(2) Faculty of Business Informatics
State University – Higher School of Economics
Kirpichnaya str. 33, 105679 Moscow, Russia
Tel: +7-495-771-3238; fax: +7-495-771-3238
e-mail: vfomichov@hse.ru and vdrfom@aha.ru

ABSTRACT

This paper is aimed at explaining the principles and the model of the educational process underpinned by the ideas of Cognitonics. It is a new scientific discipline aimed at explicating the distortions in the perception of the world caused by the information society and globalization and at coping with these distortions in different fields, in particular, conducing to overcoming a gap between spiritual (emotional) and intellectual (professional) development of the person in the new reality of swift changes, technological challenges, and globalization.

1 INTRODUCTION

In the modern information society, the following tendencies concerning the development of the personality are observed: the shift from the eternal values to commercialized values, an increasing gap between the intellectual (professional) and spiritual (emotional) development of the personality, and the underestimation of the national cultures in the age of globalization. To overcome these negative shifts, it was proposed to develop a new scientific discipline called Cognitonics [1, 2]. It aims (a) at explicating the distortions in the perception of the world caused by the information society and globalization and (b) at coping with these distortions in different fields by means of elaborating systemic solutions for compensating the negative implications for the personality and society of the stormy development of information technologies and globalization processes, in particular, for creating cognitive-cultural preconditions of the harmonic development of the personality in information society and for securing the successive development of national cultures [1, 2, 4].

The birth of Cognitonics has been stimulated by the ideas of Philosophy, Cognitive Linguistics, Artificial Intelligence theory, Applied Linguistics, Art theory, Cognitive Psychology, and Cognitive Biology. The goals of Cognitonics are to be achieved, first of all, through education. The main subject of this paper is a working model of educational process underpinned by the ideas of Cognitonics. This working model is a cross-disciplinary program covering 12 years of continuing studies, the starting age of the students is 5 - 6 years. The positive experience of implementing this program accumulated by the authors covers 19 years, the total number of taught students exceeds six hundred fifty, the age varies from 6 to 19 years.

2 BASIC PRINCIPLES UNDERPINNING A WORKING MODEL OF COGNITONICS

The main social function of education is the reproduction of the culture. We regard cognition as an active transfiguration, as an introduction of beauty into the world by means of creativity. Cognition is an active transfiguration in comparison with the passive reflection. Our approach to solving educational problems corresponds to the ideas of constructivist theory, according to which knowledge is not just simply transmitted from the teacher to the pupil but rather is being constructed in the mind of the pupil in the process of active learning. Under the framework of our new approach, underpinned by Cognitonics as a new scientific discipline, creative work aims at transfiguration of the world around by introducing beauty into it. Such kind of creativity introduces humans into the cultural space, the space of eternal values and eternal questions.

The so-called world of grown-ups, revealed in the world of art, music, poetry, literature, becomes very tempting for children. The process of knowledge accumulation is speeding up day by day. Children are taught to make their own discoveries while decoding the pictures and establishing the ties between painting, poetry, literature. The starting age of the children initiated into the cultural space and into the world of art and thoughts in particular is very important. Taking into account that the cultural space of the mankind is like an ocean and own cultures – like rivers flowing into it to enrich it, children should be taught how to swim first in their "local rivers" and then they will be bestowed by the intellectual and spiritual pleasure to breathe in the air of the ocean, and some of them won't resist the temptation to sail or to swim in that ocean.

The aim of cultural reproduction and enrichment as well as the aim of intellectual and spiritual development of the child should be put together and incorporated in the educational process. The peculiarity of educational process is defined by putting together, intertwining in one course different humanitarian branches: literature, poetry, art, music, philosophy, language, and classic dances. This cross-disciplinary program across traditional educational disciplines is developed to achieve the goal. Learning at a high cognitive level requires the understanding of facts and concepts in their context, applying them to new situations, analyzing them, evaluating them, and synthesizing new concepts from them.

The efficiency of such idea is explained by the natural ability of the human brain to perceive the world in its various manifestations. The program also takes into account the peculiarity of the modern society – a self-oriented, strongly pragmatic generation.

2.1 Basic Principle 1: Establishing Numerous Correspondences Between the Topics Under Discussion Throughout the Course

Let's begin to consider the main principles of the educational process model underpinned by Cognitonics. First of all, show (as an example) the way the basic notion of the Russian culture – Beauty – is introduced into the conceptual picture of the world of the students. This will help us to get an initial impression about the principle of establishing numerous correspondences between the topics under discussion throughout the course.

1st year	2nd year	3rd year	4th year
Beautiful princess: the phenomenon of Cinderella's sisters	The beauty of the seasons: subtle beauty	aesthetics and ethics	Beauty as a philosophical notion
5th year	6th year		7th year
The difference between cold glamorous beauty and subtle beauty	The idea of beauty in the female portraits (Russian painting of the 19th -20th centuries)		The beauty of the parks and estates
8th year	9th year	10th year	
The idea of beauty in Russian culture revealed in painting at the beginning of the 20th century. "Blue Rose" ("the pictures like prayers")	The way the human consciousness resists the destruction of Beauty as a philosophical notion (the beginning of the 20th century)	Linden avenues (dark linden alleys of Russian estates) as an embodiment of Russian culture, based on the notion of beauty (the end of the 19th – the beginning of the 20th century)	

2.2 Basic Principle 2: A Particular Notion as the Point of Intersection of the Ideas

Example 1. The notion "calling" is the main notion connecting a human being with the society. It is the strongest social link, providing the sound relationships between the human beings, forming the sound society. This notion is the basic idea for entering the society, revealing one's self, and being a success.

Calling is considered as the most important work a person can do in which he/she would be most difficult to replace. This notion is discussed together with such notions as assignment and occupation. As an example of the point of intersection between the eternity and every-day life, the idea of uncertainty is discussed in connection with Matthew the Levite, who was a tax collector in Capernaum (Bulgakov's "Master and Margarita"). A tax collector was one of the most certain occupations in Rome. When God called Matthew into service, he didn't present him with an employment contract. We cannot know the future exhaustively, an element of faith exists in every decision. On the other hand, the life experience proves that without faith it will be hard to be creative, innovative, and curious about new technologies and computers.

The notion "etiquette" is introduced in the context of social agreement and social ties. Students are taught that the violation of social agreement causes serious private problems for the person as a result of misunderstanding. It leads to expanding the space of uncertainty for the person.

Example 2. Predictive behavior caused by etiquette minimizes uncertainty and makes social ties much stronger and much more comfortable. According to [3], social agreements are aimed at making the behavior predictable. In "Sleeping Beauty", for instance, the King behaved against etiquette. He sent the invitations to the fairies but he didn't receive the confirmations. As a result, he didn't know whether the invitations were received and accepted. So the violation of the social agreement caused the provocative behavior on the part of the King. As a result, the King faced unpredictable behavior of the 13th fairy.

Social agreements are based on communication. To attain better communication within the community, to make it relevant, children should be taught to listen to the partner of communication and try to hear with all their hearts.

Children should be aware of the problem of understanding, because understanding is based on the conceptual picture of the world. Fyodor Tyutchev, a well-known Russian poet, philosopher, and a diplomat of the 19th century, wrote: " A thought when spoken becomes a lie.". Being decoded by students, this idea will conduce to minimizing the examples of misunderstanding between people: between grown-ups and children, between people belonging to different cultures.

2.3 Basic Principle 3: Purposeful Socialization (How to Avoid the False Impression of Impinging upon an Individual Freedom)

To overcome the difficulties and misunderstanding that cause rebellious behavior and deep conflicts, it is necessary to make children understand from the very beginning that they and adults *are eating one and the same apple but from different sides.*

Example. One of the notions forming that so called *apple* is "offence". We have to consider offence as a result of a situation when someone's behavior doesn't meet the expectations of the other person.

The idea of putting together in one bundle these main principles (our educational model is based also on several other principles formulated in our previous publications) is to make the child be reflected "in all the mirrors" round him/her in one moment in order to have a multi-facet reflection. It is an attempt to implement a cross-disciplinary approach to viewing oneself as a multi-facet personality.

3 THE METAPHOR OF AN EGG: A YOUNG STUDENT AT THE AGE OF 12 - 13 IS INSIDE AN "EGG"

Let's consider the structure of three metaphoric concentric layers forming the cognitive nourishing shell of an egg (at the moment when the egg hatches)

Denotations: OutLr = Outer Layer, MidLr = Middle Layer, InnLr = Inner Layer

SECTOR 1	➜	SECTOR 2
OutLr: Basic notions MidLr: Good – Bad,Beauty InnLr: Life experience		OutLr: Reality MidLr: Uncertainty, swift changes InnLr: The phenomenon of Cinderella's sisters; "Spring" (Boris Pasternak)
SECTOR 3	➜	SECTOR 4

OutLr: Anchorage =
Sweet Home (Dulce domum)
MidLr: Certain, clear to children values; moral values
 InnLr: Revealing the picture
      of the world
      of the student
		OutLr: Awareness of another look
		MidLr: (1) the basis for misunderstanding;
		       (2) mind-expanding experience;
		       (3) thought-provoking experience
		InnLr: thaw ➜ a dapple-gray stallion;
		       thunderstorm ➜ blinding stills;
		       definition of offence

SECTOR 5	➜	SECTOR 6

OutLr: Thought-Producing Self
MidLr: The student generates
His/her own vision, idea, metapho
InnLr: "Whipped cream on the
     surface of the lake"
    (the image of white lilies)
		OutLr: Become noticable
		MidLr: Language (discussion):
		      "I agree, disagree,
		       I would like to add"
		InnLr: Awareness of his/her thoughts
		       as a precondition of the discussion

	➜	SECTOR 7
		OutLr: Reward for the work of soul and mind + ne MidLr: Fresh experience InnLr: awareness, appreciation of the society

Comments on the Metaphor. A young student (the age 6 – 12 years) can be depicted as an imaginary egg. Until he/she is not a teenager, until the "egg" hatches and a teenager comes out of it and starts considering himself/herself as a member of the society, we propose the way of handling the "egg", and this new way is underpinned by the ideas of Cognitonics.
IF AN EGG THEN:
1. Never press, never impinge upon. Teach to take the responsibility for the deeds and views.
2. Put it into the warmth of concern and protection.
3. Always watch and be attentive to the surrounding lest the egg should be destroyed before due time.
4. Don't be too attentive. Remember: once in due time the egg will hatch!

4 CONCLUSION

Our working model of educational problem deals with the existing gap between the intellectual and spiritual development of the personality. The notion "human being" can't be regarded without considering such notions as "body", "soul", "spirit". The expanding gap destroys the integrity of the human nature. Spiritual values are rooted in the developed emotional sphere of the personality. The emotional sphere is closely connected with the sensitivity. Modern education is focused on the development of cognitive mechanisms being necessary for improving the information processing abilities of the child. Informational technologies don't require the spiritual development of the person. But it is clear that every intellectual discovery should be followed by equal to it spiritual discovery, lest the present time and challenging prospects should split off the eternity. In this context:

1. The paper reveals the main principles of the working model of educational process underpinned by Cognitonics. This model has been tested for 19 years, more than 650 students have taken part in this work. The age of students varies from 5 till 19.
2. The model is strictly oriented at the peculiarities of the different ages of the students.
3. It takes into account the peculiarities of information society, globalization, and the existing shift towards the commercialized values.
4. The model is aimed, in particular, at balancing the work of soul and the work of mind and at bridging the gap between the rational and ideal entities in the students' conceptual picture of the world.
5. The basic ideas of the working model of educational process underpinned by Cognitonics are published in the monograph [4], in over 50 papers in English (numerous references can be found in [1-2, 4]), and in 3 papers in French.

References

[1] V.A. Fomichov, O.S. Fomichova. Cognitonics as a New Science and Its Significance for Informatics and Information Society; Special Issue on Developing Creativity and Broad Mental Outlook in the Information Society (Guest Editor Vladimir Fomichov), Informatica. An Intern. Journal of Computing and Informatics (Slovenia), 2006, Vol. 30, No. 4, pp. 387-398.

[2] O.S. Fomichova, V.A. Fomichov. Cognitonics as a New Science and Its Social Significance In the Age of Computers and Globalization. *IIAS-Transactions on Systems Research and Cybernetics. Vol. VII, No. 2. Intern. Journal of The International Institute for Advanced Studies in Systems Research and Cybernetics*. Published by The International Institute for Advanced Studies in Systems Research and Cybernetics (IIAS), Tecumseh, Ontario, Canada, 2007, pp. 13-21.

[3] J. R. Searle. *The Construction of Social Reality*. The Penguine Press. 1995.

[4] [O.S. Fomichova. *Humanitarian Education – an Answer to the Challenge of Time*. Moscow State University Publishing House. 2009. In Russian.