

# SYSTEMOLOGY of EDUCATION

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## Аннотация

Обращая особое внимание на актуальность широкого освоения и применения методов системного анализа и синтеза для решения задач современных проблем образования, приводятся основные результаты системного рассмотрения и организации образовательной деятельности, нашедшие воплощение в развитии Латвийской системы образования за период времени с 1993 по 2000 г. Характеризуется функциональная структура системы образования, общая структура цели и результата образовательной деятельности - образованности, а также узаконенная структура образовательных программ и государственных стандартов образования. Дается краткая характеристика общего назначения лекционного курса СИСТЕМОЛОГИЯ ОБРАЗОВАНИЯ, реализуемого автором с 1997 г. в педагогических вузах Латвии.

Key words : systems theory, educational systems, educational programmes, educational standards, educatedness, quality of educatedness.

## 1. SYSTEMOLOGY FOR THEORY AND PRACTICE OF EDUCATION

Clarification of the principal relations existing between the human and his living environment proves that **having definite ARRANGEMENT in the reflection of the world in human consciousness is a fundamental fact, which** characterizes separately, not only the cognitive process, consideration and the human behaviour that follows, but also **reveals the organization of human consciousness in its totality**. Therefore also the whole human conscious life always and everywhere testifies the good arrangement of human activities as the indicator of definite balance of order and disorder. In other words, every conscious human action is characterized by its appropriate contents and formal *ARRANGEMENT AS DEFINITE BALANCE OF ORDER AND DISORDER*; being aware of it is the basis of life organization of any sensible man [ 1 ].

According to the particular importance of the above-mentioned fact, a general theory on arrangement of world phenomena as the expression of joint linkage has been developed – systemology. Consistently realizing the super idea about the joint linkage (interconnection) of everything as the cause of everything, this is a universal theory about the arrangement of the world or general theory of order - disorder phenomena in the world.

**SYSTEMOLOGY IS GENERAL THEORY ABOUT THE ARRANGEMENT OF THE WORLD  
AS THE EXPRESSION OF JOINT LINKAGE OF EVERYTHING,  
the world outlook and vision of the sensible human,  
the theory of relations between the whole and the parts.**

## PHILOSOPHICAL AXIOMS OF SYSTEMOLOGY

- **World** is the totality of diverse phenomena or variable bodies where human is one of these phenomena or variable bodies.
- **Human** is a conscious living being who has its characteristic flesh and spirit. Human's spirit acts as totality of soul, mind and will.
- **Human consciousness** has its definite arrangement, which serves as a basis for human's sensible or purposeful activity.
- **Human cognizes the world** by parts, comparing and connecting them.
- **The cause of everything** is the joint linkage (interconnection) of everything.

Any system, which can be either the totality of things or processes, images or notions, etc. always exists in unity with the outer medium or environment corresponding to this particular system. Systems are abstract reflections of the world phenomena in human consciousness: **everything reflected in human consciousness is treated as a system**. Thus, we can say that *any phenomenon can be looked upon as a system in the environment made up by other phenomena*.

Systemology is applied philosophy and psychology, a universal theory of human's common sense. A system is an entity in an environment that is of interest to people and that is shaped by mutually related parts. Systemism is a methodology concerning a sensible person's world view - it is the way of world's reflection in our consciousness. Every phenomenon of the real and imagined world (a thing and/or a process) can be seen as a system. That is why these days we are increasingly finding the terms "system", "system structure and properties", "system analysis and synthesis", etc., and using them with a greater or lesser understanding.

Today, when our lives involve global shifts as different changes and transformations, the conscious application of the ideas of **systemology in education** becomes particularly important. The research and improvement of educational systems in accordance with the new conditions of life are expressed as a solution to the overall problems with bringing new order to this area of human activity [ 2 ].

The term "educational system", which is used so very frequently, is the best way to see the process of systemology in educational activities. Unfortunately, the frequency with which the word is used does not in and of itself affirm a sufficient understanding and conscious use of the concept. Even though many educational leaders, as practitioners with good common sense, are in essence accidental system theorists, the fact is that theoretical enlightenment improves their work to a considerable degree. We must always understand that the sensible person is always interested by the *properties of systems* as a final result – their conscious use and transformation in concert with one's interests. Systemology, as a theory that is to be applied in practice, serves mostly as an affirmation of the sensible direction of one's own thoughts, considerably stimulating the further optimization of one's work.

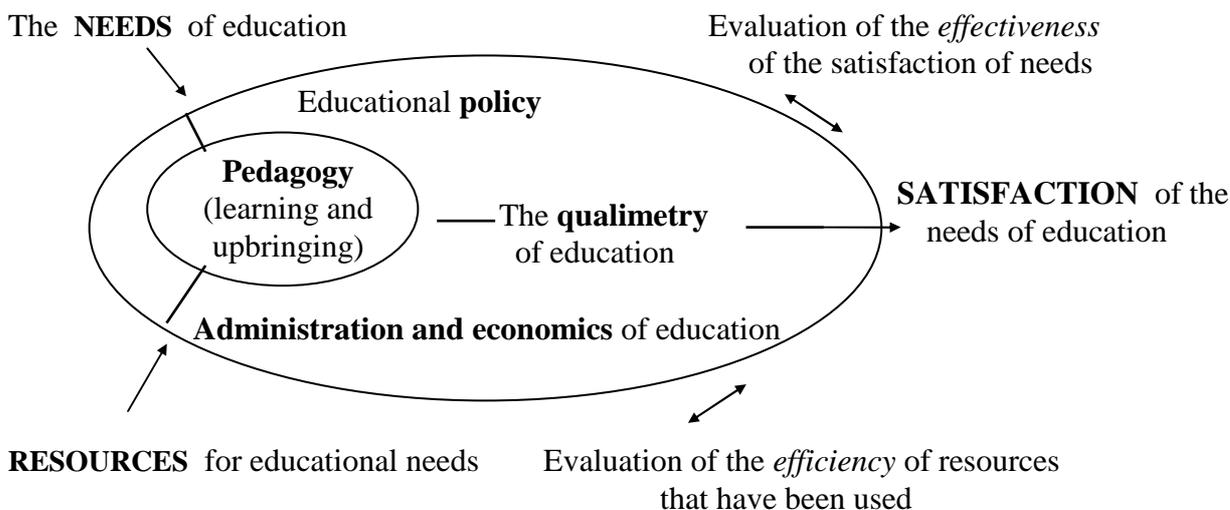
## 2. UNIVERSAL FUNCTIONAL STRUCTURE OF EDUCATIONAL SYSTEMS

If we look at our lives as the implementation of a specific order of things and processes, then the order that is set up characterizes the experience of human life, i.e. – education. If we abstract ourselves from the content of education and the concrete way in which that content is learned, we first of all reveal the systemic structure of **educational activities as purposeful activities**.

Any purposeful activity is a procedural system that, in a macro view, is a whole that exists in an environment of other activity, while in a micro view we gradually reveal the hierarchical structure of the activity as a linking of the various parts into the whole. Any purposeful activity, in a macro view, is related to the surrounding or external environment in three ways. The environment usually proposes the **NEEDS** which must be satisfied by the activity. In order to carry out the activities, the environment provides the necessary **RESOURCES** (in special cases taking advantage of the internal resources of the entity that is performing the activities). When the needs encounter the proper resources, the activities are performed, and the environment enjoys the **SATISFACTION OF ITS NEEDS** as the result of the activities that have been performed.

All purposeful activities are first and foremost described by blocs of management and execution activities that are linked by a direct and a reciprocal relationship. The bloc of management activities, in turn, is shaped by the elaboration of operational goals, the direct management of activities, as well as self-control over the activities. Bringing these general ideas closer to the terminology used to describe social systems, we find that the elaboration of operational goals represents the formation of operational policy, while the direct management has to do with administration and economics; control means an evaluation of the purposefulness and quality of the activity.

### THE FUNCTIONAL STRUCTURE OF EDUCATIONAL SYSTEMS



Along with the internal control over educational activities, there are also external processes of evaluation, with society specifying the effectiveness of the way in which needs have been satisfied, as well as the usefulness of the resources that have been applied. As can be seen in the next figure, the functional structure of education that was described in the first figure conforms to the organization of educational activity at all of the levels of its implementation.

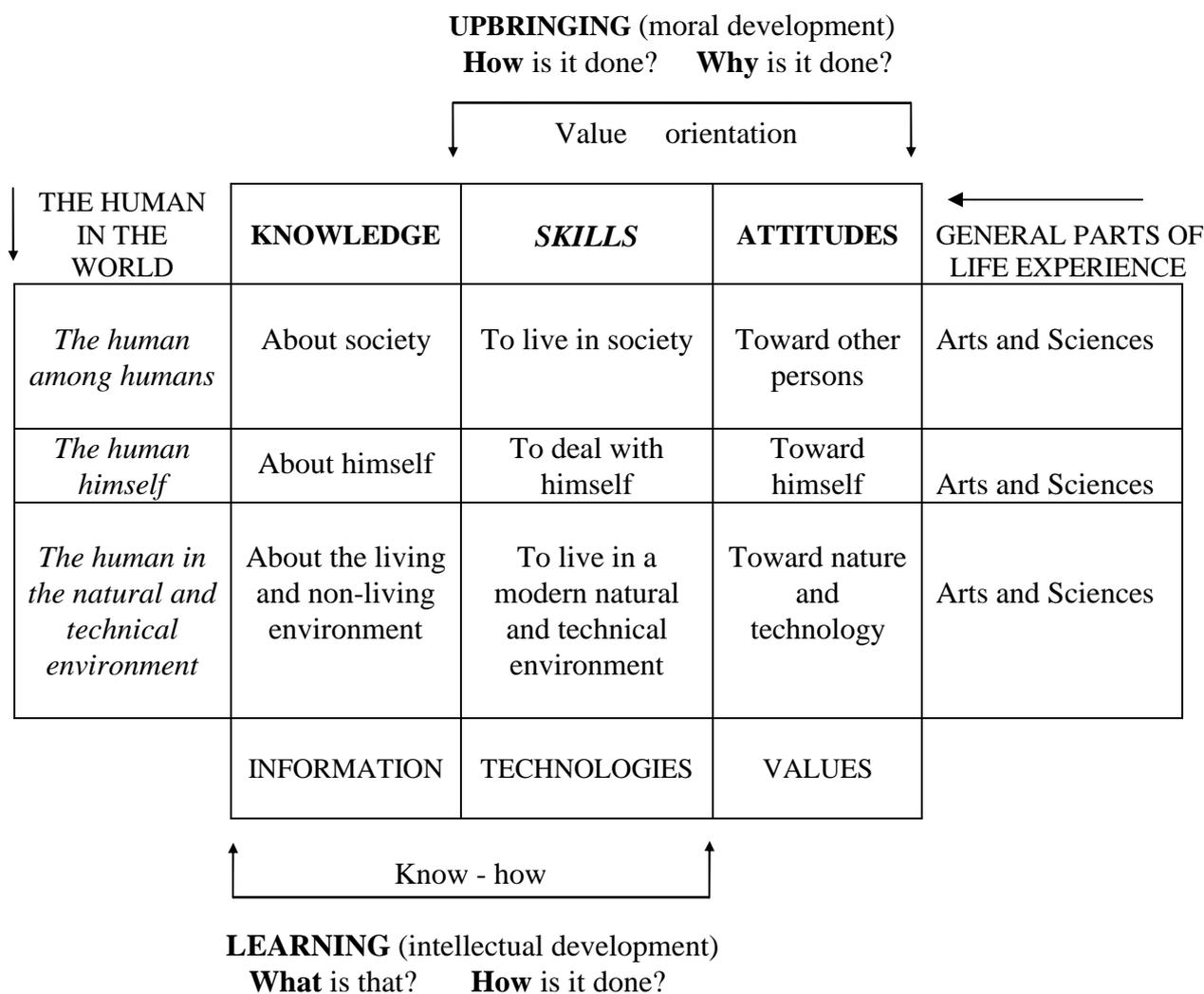
### 3. EDUCATEDNESS - GENERAL CONTENT AND LEVELS

Under conditions of serious and rapid changes and transformations in life, it is very important to conduct a systemic analysis of the education that persons or society at large have

received, e.g. – **the quality of educatedness**. It is very much necessary to look at the changes that are occurring and to separate out that which is eternal or comparatively unchanging, preserving it and supplementing it with the content and level that are demanded by new needs in life.

If we consistently look at educatedness as life experience that people have obtained in a specific way, and if we separate out the *three basic elements of human life experience (knowledge, skills, attitudes)* in connection with the person himself, with the human environment and with the natural and technical environment, then we can shape a voluminous yet compact matrix-shaped review of the fundamental content of human educatedness.

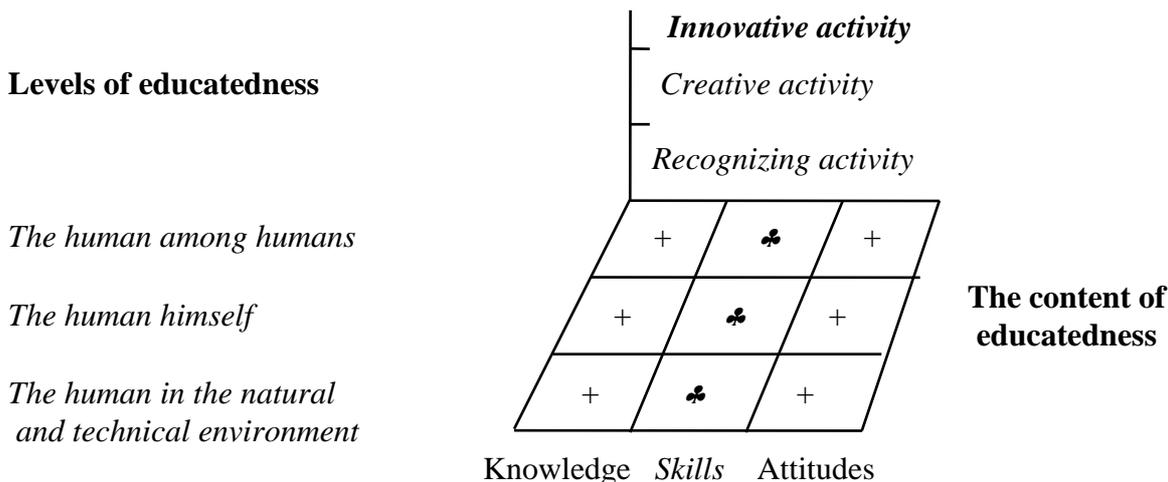
### THE GENERAL STRUCTURE OF THE CONTENT OF EDUCATEDNESS



The three aforementioned elements of educational content essentially dictate the basic structure of all of the educational programs that are elaborated ; initially they were set out in the Latvia’s educational concept, and later they were also included in the country’s new education law. At this time they are being described in greater detail in the country’s educational standards [ 3, 4, 5, 6 ]

Educatedness affirms itself fully in person's life activities, and the content of education that has been learned is revealed at the level of recognition, creativity and innovation. These *three fundamental levels* are the basis for any system to evaluate the education that has been obtained, irrespectively of the way in which the level of educatedness is evaluated (points, grades, etc.). A combination of the content and level of educatedness have been used since time immemorial to describe the quality of educatedness of an individual or his society.

### THE QUALITY OF EDUCATEDNESS (CONTENT AND LEVEL)



When it comes to the development of educational systems, these universal schemes allow us to see several important issues with greater clarity [ 7 ].

First of all, the scientific and technological revolution has materialized in the form of global transportation, energy and information networks, and it has devoted far too little attention to the nurturing of human values and orientations. The technocratization of human lifestyles, which is characterized by a distinct emphasis on the sciences and technologies under conditions of market economics and liberalism, has developed much more quickly than human attitudes have changed. Environmental protection problems are discussed often and are very important, but in fact we are talking about the attitude of humans toward other humans here.

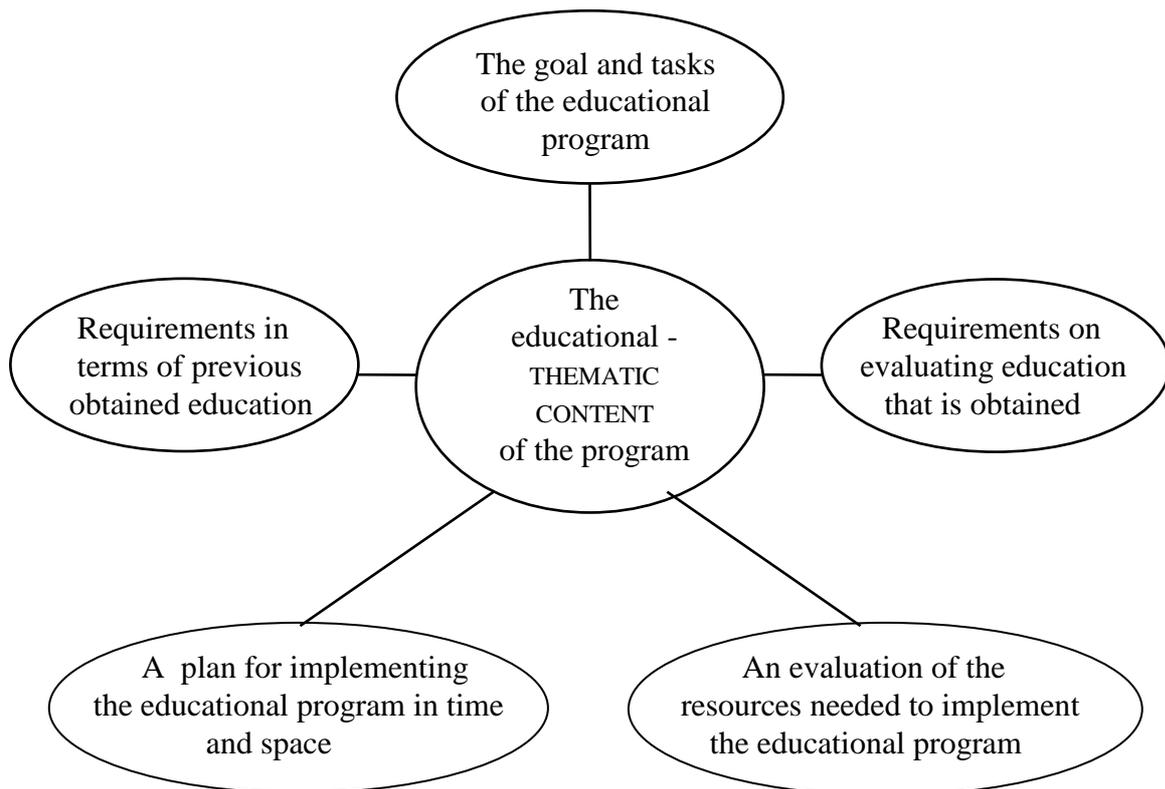
A second factor is that as the variety of things and processes in the world expands with inordinate speed, as the number of human contacts rises, as lives speed up – accents are clearly being shifted these days from the need to learn a great deal of knowledge to the need to be able to work with that knowledge. At the same time, however, we must deal with the ancient problem of distinguishing those things which must be learned with full understanding and those which can simply be memorized. The modern illiterate not only fails to be able to read and write, he also cannot press the appropriate buttons. But are we, and will be continue to be protected against senseless (insufficiently understood, ordered or responsible) pushing of buttons in this time of technological superiority ?

#### 4. EDUCATIONAL PROGRAMMS AND STANDARDS.

A new order is also required today by the way in which educational processes are offered and implemented. Experience in educational activities in other countries of the world suggests that **educational programs** are the answer. Educational programs are the way in which educational offers are made to those who would receive the education. For those who provide educational processes, programs offer documented methods for implementing the necessary educational activities.

After a fairly long process of consideration and search for understanding, the newly established structure of Latvia's educational programs is finally beginning to take root in Latvia. The main problems in introducing this necessary innovation have emerged from the fact that it has been difficult to look at educational activities from a broader and more correlated perspective. Latvia's educational programs are more than just a statement of educational content, more than just the curricula that have always been used. The educational programs are made up of six systemically linked elements that bring both spiritual and material aspects into the mix.

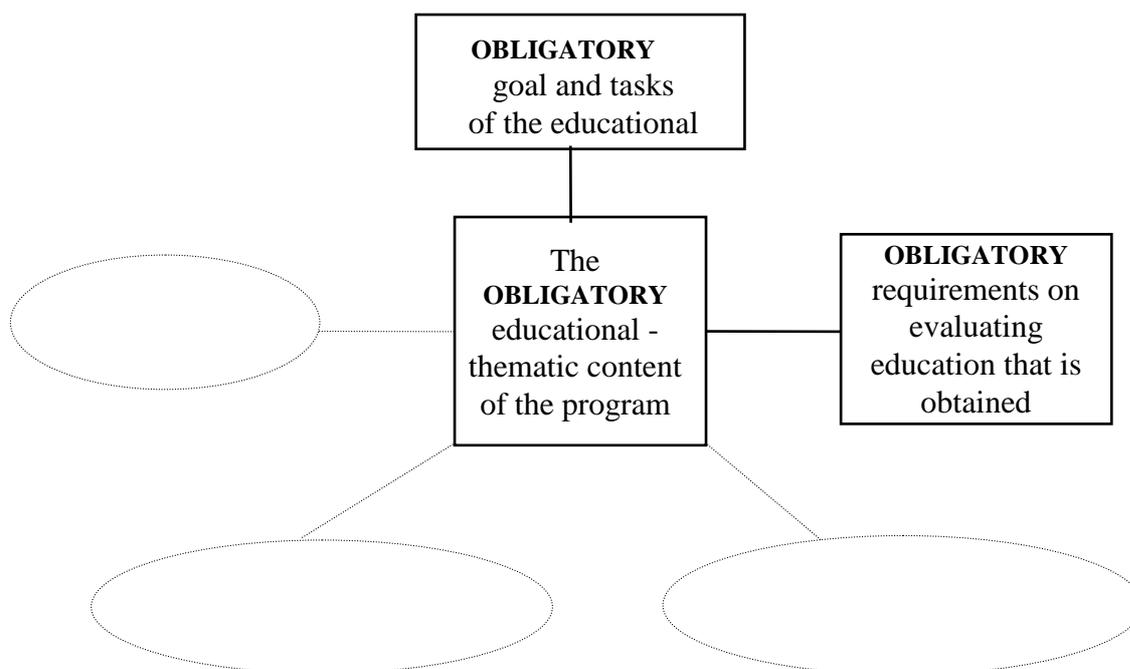
#### THE STRUCTURE OF EDUCATIONAL PROGRAMS IN LATVIA



**Educational programs in Latvia are elaborated by the institutions that are to implement them. The work is done in accordance with educational program standards and applied norms.** The Ministry of Education and Science organizes the elaboration and approval of the most important educational program standards, and it also organizes the preparation of sample programs in the most common areas. As national educational program

standards are set out, the state specifies generally recognized and unified basic requirements with respect to educational goals and tasks, the content of education, as well as the way in which learning is evaluated. As long with the mandatory requirements that are set out in these standards, the state also allows schools and teachers to demonstrate self-initiative in coming up with creative elements in this area [ 4, 5, 6 ].

### THE STRUCTURE OF LATVIA'S EDUCATIONAL STANDARDS



Finally, of particular importance in bringing greater order to educational systems is the need to ensure links among the various educational programs when it comes to entrance and exit requirements in the programs. Throughout the world these days, educational programs are gradually being harmonized not only within individual countries, but also at the international level. The classification of educational programs is done in accordance with the stages, types and target audiences of education, while registration is done via various educational program registers. In Latvia the classification is based on the UNESCO-approved international educational classifier ISCED-97.

### 5. INVITATION TO STUDY COURSE “SYSTEMOLOGY OF EDUCATION”

Systemology in life and education - study of the arrangement ( balance of order and disorder ) of the world. Bringing together the material and the spiritual, the life of any individual is a process of change that has to do with the person's appearance, existence and then disappearance from the world. Our lives are part of the processes of the world and all changes link each of us to our living environment. Human's life in the world represents the implementation of his life in connection with other people, the whole process taking place in the respective natural and technical environment[ 8, 9 ].

The philosophical and psychological readiness of every pedagogue are two of the three whales on which his professional competence is based. The third whale, of course, is the know-how of contents of the subject chosen by the teacher and the practical knowledge of

