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PARADIGM OF EDUCATION FOR THE INFORMATION SOCIETY

Abstract. Considering total crisis in education in Informational Age, we suggest that to overcome the crisis, it is necessary to promote pedagogical science up from "pre-paradigm stage" to the "paradigm stage". For this purpose it is necessary to separate the "educational science" from "education." "Educational paradigm" in such study will be the subject of the science. The key concepts for the "pedagogical paradigm" should be the concepts of "educational practice", "class of problems" and "educational text". We offer some axioms around these concepts.

Keywords: *information society; educational practice; class of problems; educational text; educational paradigm; paradigm of pedagogy as a science; crisis of education;*

1. Introduction

There are two practical key aspects to study the concept of "*paradigm of education*." First is a crisis of modern education and the second is global trend of development of *e-learning*. Why do we distinguish these two aspects?

First, the *crisis of the education system* means that the education system can not achieve the purpose for which it was created. Second, the development of e-learning significantly changes the educational environment and the learning process. Education is increasingly moving from the classroom to the global educational environment (GEE) [1]. It is becoming increasingly distributed and heterogeneous. Changes in social development has brought and will continue to lead to changes in the content, structure and scope of public activities. They cause a significant increase in the volume of data that are produced and circulate in the community, a sizeable increase in the dynamism and complexity of the social, economic, scientific, technical and industrial processes [2]. [3], among other philosophical problems of education indicates the following:

The necessity of *outrunning character of education*. Education must prepare young people for a living in a new unpredictable world.

Fragmentation of knowledge and information crisis. The amount of existing information for solving any problem is so big that it is almost impossible to find essential data in the "ocean of information", which, according to many scholars, led to the disintegration of our knowledge

into set of elements that are poorly connected to each other. It means lack of "synthetic approach linking the various sciences." According to V. Davydov and V. Zinchenko, the education system, trying to copy the differentiation of science, seeks to grasp the immensity. [3]

In such circumstances *higher requirements for the educational process involve more precise definition of targets, more accurate measurement of results and better performance indicators*. Without this it is impossible to select the best educational practice. To compare the different educational practices we need to develop a consistent conceptual basis on which to build a qualitative measurement.

The authors recommend to begin with restoring order in the "paradigms of pedagogy and education." At the moment, it is not theoretical, but practical questions. It is absolutely necessary to solve this problem to improve educational system substantially

What is a paradigm?

In the book "The Structure of Scientific Revolutions" [4] T.Kuhn gave the following typical picture of the development of science

1. "*Pre-paradigm (early) stage*". Researchers do not adhere to a single point of view on how to conduct research and how to understand the basic phenomena of the domain. All points of view are equally popular
2. "*Paradigm (the first mature) stage*". The research (a book) appears that became a pattern for many, and sets its style of research as a standard in the domain. This study as a perfect example is A Paradigm (in Greek). Further work of scientists adhered to the standard is a "normal science"
3. "*The scientific revolution*" - a new outstanding research appears and pretends to be a new standard. Scientists one by one leave the old standard and begin to use a new one. It looks like a "gestalt switch" - now the old phenomena are understood and interpreted in a new way. When the new paradigm won finally, there comes a normal science again – it is the next stage of maturity

This meaning of the word "*paradigm*" implies consequences as follows:

Corollary 1-2-3

1) It is impossible for any person to work in many paradigms simultaneously. "Gestalt switches" abruptly and completely.
2) There are few paradigms in history, and they are all known. The history of science is cut into the paradigms in a unique way.
3) The coexistence of many peer paradigms actually means that this is "*pre paradigm stage*".

We conducted a search on words "*pedagogical paradig*m". Here are the most representative fragments.

There is [5] a list of the most common educational paradigms (they all belong to the educational process in our terminology):

- traditional-conservative (knowledge-centered-paradigm);

- rationalist (behavioral);
- phenomenological (humanistic paradigm);
- technocratic;
- non-institutional paradigm;
- humanitarian paradigm;
- learning by discovery;
- exoteric paradigm.

[6] also notes that in modern *Russian pedagogical science is considered to be fairly common fact of "pre-paradigm" stage of the modern theory of training and education with the trend of a gradual transition to a new paradigmatic level*. According to the author [3] education of XXI century will be based on principles of humanization, humanitariation, fundamentality, differentiation, democratization, mobility, advance timing, transparency, continuity. The conjunction of these principles can be described by the term "personal oriented" paradigm.

The authors of [7] analyzed the fact of multiparadigmatic character of pedagogy and the possible consequences of such a situation. They make proposals for the formulation of "pedagogical paradigm". For example A. Kolesnikova introduces the concept of "pedagogical paradigm" as the characteristics of typological features and semantic boundaries of the existence of the subject of educational activities in the area of professional life. There are given grouping of paradigms with various reasons. Such as:

- on the ground of *necessity and freedom*: traditional and humanistic educational paradigm;
- on the ground of *quality perception of educational subjects, understanding their essence, the method of constructing the educational process*: scientific and technocratic, humanitarian and exoteric.
- on the ground of *educational communication*: natural science based (experimental), technocratic, humanistic, exoteric and polyphonic paradigm;
- on the ground of the *type of educational process*: pedagogy of authority, manipulation and support.

The analysis in [7] formulated the principle of multiparadigmatic character in pedagogy that is characterized by the following provisions:

- permissibility of the coexistence of *several methodological systems* for integrated, completed models of the educational process, expressed in the form of pedagogical theories, technologies, systems of training and education;
- orientation of processes of socialization and individualization toward *differe*nt paradigmatic values;
- the use of *different paradigms* in strategic (ideological) and operational levels by one teacher;
- dependence of the teacher's paradigm choice from the level of maturity of learning motivation of students (passive or active style of intellectual development);
- the combination of elements from different paradigms within specific technology of education;
- the existence within big paradigm a set of partial paradigms, each of which has its own specific set of views on the objectives, content and process of education and training.

In addition, it should be noted the fact of depending the teacher's choice of paradigm from the teacher's level of qualification. It is well known that the low level of professional competence of the teacher implies the authoritarianism of traditional pedagogy, with its rigid determination of the educational process. Humanity pedagogy always required both a high level of professional skills and high level pedagogical values [7].

Turkot T.I. [9] identifies the following educational paradigms: cultural value, academic, professional and technocratic. Now an alternative to technocratic and professional and pragmatic paradigm of university education advocates humanistic (from the Latin. Humanus - human, humane) orientation of university education. According to the humanistic paradigm of the main value of university education there is identity of the person.

Makarchuk I.O. [10] as a result of a thorough analysis of the views of the paradigm of education concludes that even those elements of the humanistic paradigm of education that have already been developed, were not used by the scientific community properly. Among researchers of problem definition and comprehension of educational paradigm and the paradigm approach is quite common opinion about the critical state of so-called traditional paradigm of education..

Different authors emphasize that in today's world there is a need for a radical revision of the foundations of education. According Agapova NG [11] philosophical reflection is required regarding the paradigmatic foundations of modern educational theory and practice.

Based on the examples above, one would assume (See Corollary 3), that science of *pedagogy* is now on "*pre-paradigm stage*", as the presence of many peer paradigm, (in terms of Kuhn) is the sign of the "early stage". But then, comparing these three fragments with the Corollary 1 and 2, we came to the conclusion that the authors of these fragments use the word "paradigm" in a sense *different from Kuhn's*.

Indeed, **Corollary** 1 prohibits the use of several paradigms at the *same time by one person*, and **Corollary** 2 prohibits the cutting of history of science into *different* lists of paradigms. Hence, the authors use the term "paradigm" in some other sense. In which one?

Aim of the paper. The authors aim to build a "pedagogical paradigm", in order to convert a pedagogy "pre-paradigm stage" to the "paradigm". It could provide tools to build educational system for future informational society. The authors make the first move in the direction indicated.

2. Theoretical foundations of research

We drew attention to the fact that absolutely all the authors use the word "*paradigm in education*" and "*paradigm in pedagogy*" as synonyms. Moreover, search engines also consider them to be equivalent: the query "*paradigm of pedagogy*" issued by the same set of results as the query, "t*he paradigm of education*."

In our opinion, we must ***distinguish between*** "*paradigm in educatio*n" and "*paradigm in pedagogy*." From the moment you begin to distinguish between *pedagogy* and *educatio*n, you find that the above paradigms - are paradigms of *education*, rather than *pedagogy*.

"The object of pedagogy are phenomena of objective reality, which determine the development of the human person (individual) in the process of purposeful activity in society" [8].

By agreeing not with the whole phrase (but only with its underlined part), we draw the reader's attention to the fact that, according to the author, pedagogy studies ***objective*** *processes taking place* ***in society***, and thus is separated from the educational processes with *invisible wall*. But where this wall stands? Where is the line between pedagogy and education (educational process)? To answer this question, let us give several definitions.

- *Educational practice* – a learning process in real life.
- *Educational process* - educational practice plus educational texts, their creation, discussion, distribution, promotion.

Educational texts fall into three groups:

1. *Manuals (for student)* - useful materials in the educational process;
2. *Methodological texts (for teachers)* - answering the question "*how*" - how to organize the learning process;
3. *Justification texts (for the scientist)* - answering the question "*why*" - why the learning process should be organized in this way.

Education, taken in time and space - this educational process. The core of education are the educational practices.

Paradigms in Education - the system of principles and values on which this practice is based plus corresponding educational texts. But because there a lot of educational texts in the world, and the boundaries between the different "systems of values and principles" are vague, it allows researchers a to formulate differently a complete list of educational paradigms.

One teacher can simultaneously use texts of different systems. The texts are not "gestalt" for him/her, but educational tools only. By using them, he/she usually does not reflect on the values and principles, but relies heavily on experience and intuition.

Pedagogy is a study of education (educational practices and paradigms), i.e., a science. The paradigm in pedagogy should allow to compare different types of education (possibly based on different educational paradigms), describing them in a common language, analyzing them with respect to certain common criteria. These language and criteria must make a *paradigm of pedagogy.*

4.Results of research

For a start, we offer to focus development of paradigm of pedagogy around two concepts:

- educational practice
- class of problems

And here's why. Every pedagogic study to be completed with a reasonable result within a reasonable time should limit a subject of study. If such a restriction leaves ***educational practice*** beyond the scope the study is useless.

Educational practices should be compared, to choose the best. Therefore, we need common reliable method of *objective measuring the results of educational practice*. We propose a concept of "class of problems." for this. This concept contains the following axioms:

1. For every educational practice should be defined a ***class of problems*** (for which this practice is carried out). If there are a list of classes, you need to build a new class as a "Cartesian product" of these classes and take this class.
2. The purpose of the specific educational practice is to teach people to solve the problems identified in this class. What does this mean? It means that
3. It must be installed ***binary*** objective criterion to evaluate the results of a particular person for ***each task*** of the class (success/failure or 1/0) (In some cases, it can be decided by a group of experts).
4. For the entire ***class*** the percentage of ***successes*** in the total number of problems taken is calculated. If the class is infinite, it is assumed that success rate during the sequence of task given is always stabilized ("there is a ***limit*** in mathematical sense"). If the class is obtained as a Cartesian product, then the measure of quality is a vector of the same dimension
5. The success rate is measured twice - once ***before*** training and once ***after***. Grows of success rate (final rate ***minus*** initial rate) is a ***measure*** of the quality of educational practice for this class of problems
6. Now you can compare the different educational practices for the same class of problems.
7. The next step could be a comparison of such practices (with the same class of problems) for different groups of students

Some good implications from the axioms. For practice without defined class of problems or the class does not satisfy the axioms as described above and / or success rate is not measured before and / or after practice, it is impossible to measure the quality of practice.

When our position would be accepted, it will force the managers of the educational practices to describe explicitly the class of problems and to measure the success of the practice.

This may show up and become the subject of investigation for various interesting phenomena, such as:

- Indicator of quality for some educational practices is low (zero or even negative)
- The organization of practice is not directed to the *class of problems* that is declared. For example, it may be discovered that some lessons of mathematics teach not the math, but obedience and calligraphy.
- The *class of problems* is declared so that success rate can not be calculated for the entire class (there is no limit) ("I will teach you everything").
- The list goes on

We believe that such - important in our opinion - facts will be discussed in *pedagogical science* only after admission of right key concepts of the first line. And we believe that our proposed two concepts:

1. educational practice and
2. class of problems (along with a list of axioms suggested above)

are suitable for this role as a ***starting point*** in the construction of a *paradigm of pedagogy*.

5. Conclusions and future perspectives of research

During the study has been hypothesized pre-paradigm state of science of pedagogy and proposed the first step toward building a pedagogical paradigm. It would create foundations for better management of educational system and of selection better educational experience. This is needed for future educational system

Authors have own concept of "pedagogical paradigm" and invite everybody to discuss the subject. We appeal to the pedagogical scientific community and the community of education practitioners to express their views on the following issues:

1. Is it appropriate to make a clear distinction between *paradigms of pedagogy* as a science and *paradigms of education* as a practice?
2. Is there now "*pedagogical paradigm*" for pedagogy as a science in the sense of Kuhn?
3. If such "*paradigm of pedagogy*" does not exist, it is time to develop it now?
4. If the "*paradigm of pedagogy*" should be developed now, how should we to organize the process of such development?
5. Could the elaborated concepts of *"pedagogical paradigm" and "educational paradigm"* help us to build better educational system for modern world?

We are ready to organize the working space on the Internet as a forum to discuss these issues. Now are available (1) private group "*Education- shift the paradigm*" https://www.facebook.com/groups/388158321343505 and information page on the website of All-Ukrainian Association of e-learning http://ukrel.org

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