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ОБРАЗОВАНИЕ, УПРАВЛЯЕМОЕ РЫНКОМ

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Рынок развивается динамически. Образовательные программы статичны. Это несоответствие порождает неконкурентоспособность выпускников вузов на рынке труда. Только динамическое приведение в соответствие компетентностей, предусмотренных в программе обучения, с компетентностями, востребованными рынком, может решить эту проблему. Это означает, что учебный план должен динамически меняться в процессе обучения.

Настоящая статья представляет метод обучения, который оперативно приводит учебный план в соответствие с требованиями рынка.

Ключевые слова: *теория потребностей и проблем; устаревание знаний; кризис образования.*

While market develops dynamically, professional educational programs are static. This entails a non-competitiveness of graduates in the labor market. Only dynamical leveling of final training competences with actual professional competences can solve the problem. It means that a curriculum should be dynamically changed during the education. This paper deals with an educational approach that dynamically adjusts curriculums in accordance with market's requirements.

Key words: *Theory of Needs and Problems; obsolescence of knowledge; crisis of education.*

1. Crisis of education

In January to March 2013, 958,000 young people aged 16–24 were unemployed, down 17,000 compared to the previous quarter and 57,000 fewer than in the same period last year.

The unemployment rate for those aged 16–24 was 20.7%, down 0.1% points compared with the previous quarter and 1.1% points lower than a year ago (House of Commons Library's report, Published 15 May 2013).

America has a youth unemployment problem on its hands. Millions of 20-somethings can't find full-time work, according to the Center for American Progress [5].

The EU unemployment rate set a new all-time high of 12.2 percent, according to today's estimates. But it's the youth unemployment crisis that's truly terrifying. In Spain, unemployment surged past 56 percent, and Greece now leads the rich world with an astonishing 62.5 percent of its youth workforce out of a job (graph via James Plunket, Fig.1).

The report, from the Center for College Affordability and Productivity (USA), concludes that while college-educated Americans are less likely to collect unemployment, many of the jobs they do have aren't worth the price of their diplomas.

Public opinion attributes the blame for this situation on the labor market to Great Recession.

This point of view is preferable for all players on professional educational market that covers something about 150 millions students.

By our opinion Economical Crisis only discovered a uselessness of traditional education in the modern world.

Crisis of education is caused by the following reasons:

— Traditional education (in all forms, including existing e-learning) is knowledge orient-

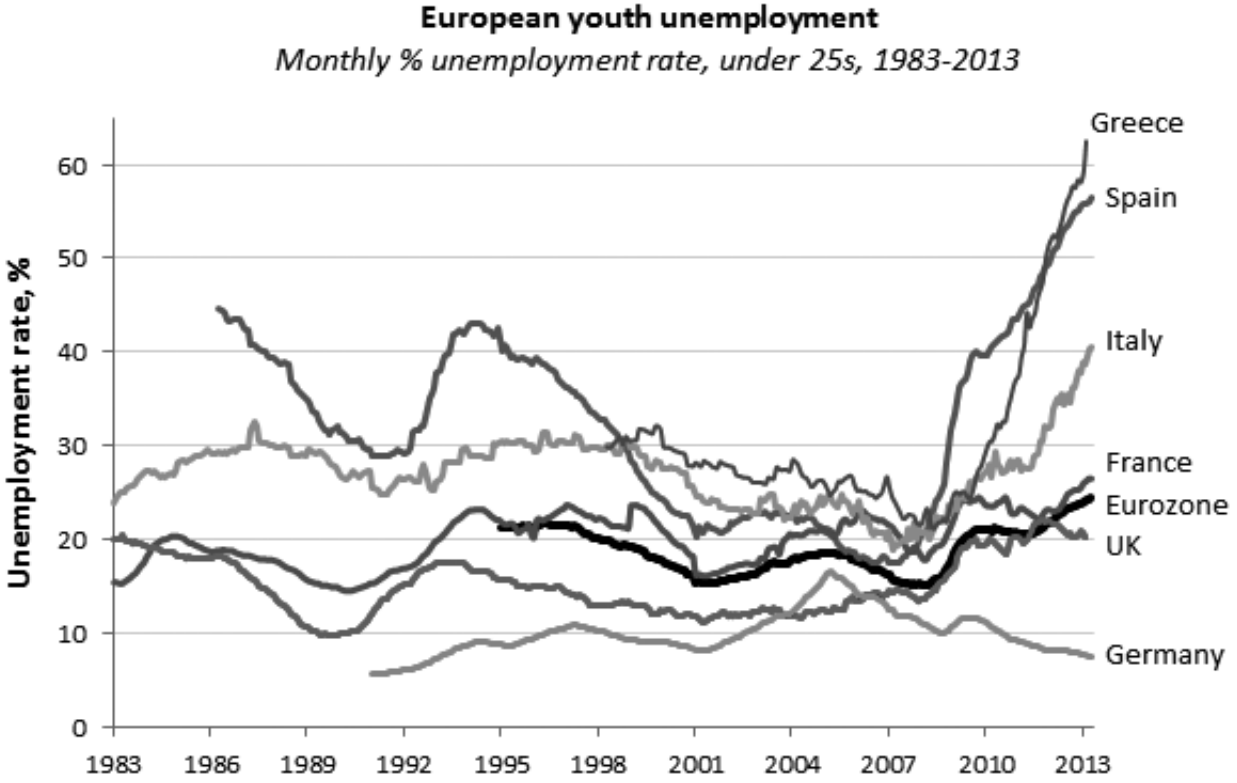

Fig. 1. European youth unemployment

ed, whereas knowledge becomes obsolete during 3 years, and this rate decreases.

— Traditional education doesn't take into account the fact that a human memorizes knowledge in form of schemata. Until now a lecturer transforms his schemata into plain text format, and a student again transforms the text into schemata independently.

— Traditional education provides student with discrete understanding of his professional activity, and doesn't provide student with comprehensive experience in professional activity. For example, a surgeon should not only operate on a patient, but he (she) should be able to organize and manage life activity of surgical department or a clinic as a whole as well as to interact with patients, with patients' kinsmen, with authorities, with law and police officers, with fiscal authority and so on.

— Traditional education provides students with competence of lecturers, which, as a rule, don't act in the professional market and their experience is not actual.

— Curriculums are developed by academic staff that, as a rule, doesn't act in the professional market, and so they don't include new competences and new specializations.

— Traditional education includes specializations that don't in demand.

— Traditional education doesn't prepare students for the living in the modern society.

The last reason, by our opinion, is key.

Long since an education is aimed to prepare new members of society.

An interaction between a human and society is defined by a satisfaction of one another's needs. An education should form hierarchy of human's needs, including a need for a satisfaction of social needs, as well as provide a human with corresponding competences.

Instead of this, academic degrees become fetishes and empty promises of successful satisfaction of all personal needs in the future.

Today repositories of learning content are available, Wikipedia is available, e-learning courses are available. Motivated persons already learn independently, using Web content, and by such way they attempt to meet the market requirements. Not-motivated people in the long run will cease to spend money on useless education.

This paper deals with a Market Driven Education approach that is able not only provide

people with actual competences, but and with necessary academic degrees.

2. Learning according to hierarchy of needs

The subject of education is a satisfaction of social need via a professional activity.

If, starting an education, a student possesses hierarchy of personal needs (motivated person), he needs to understand how every learning object contributes to the process of his needs' satisfaction.

If he will understand this, a motivation of personal needs' satisfaction grounds a motivation to master the learning content of professional activity.

If, starting an education, a student doesn't realize hierarchy of personal needs or he cannot harmonize private needs with social ones, he hasn't a motivation to learn (unmotivated person).

In any case a motivation to learn a professional activity is derived from a motivation to satisfy personal needs.

Since both professional activities and a satisfaction of private needs are carried out in the same market space, they must be correlated in the terms of real market.

Traditional education doesn't provide this possibility.

Both motivated and unmotivated persons need in representation of their hierarchy of needs. If they recognize professional activity, as a need that provides majority of other needs, the private hierarchy of needs may be represented by Fig. 2.

In everyday life a person collects, systemizes, updates and puts into practice data, related to his needs.

In the Theory of Needs and Problems [1] such information cluster is known as Need Satisfaction Domain (NSD for short). Any NSD schemata contain information of the need's origin, methods of the need's detection, available set of need's satisfactions (workflows) under different resources and also known possible problems that appear in the course of need's detection or during workflow.

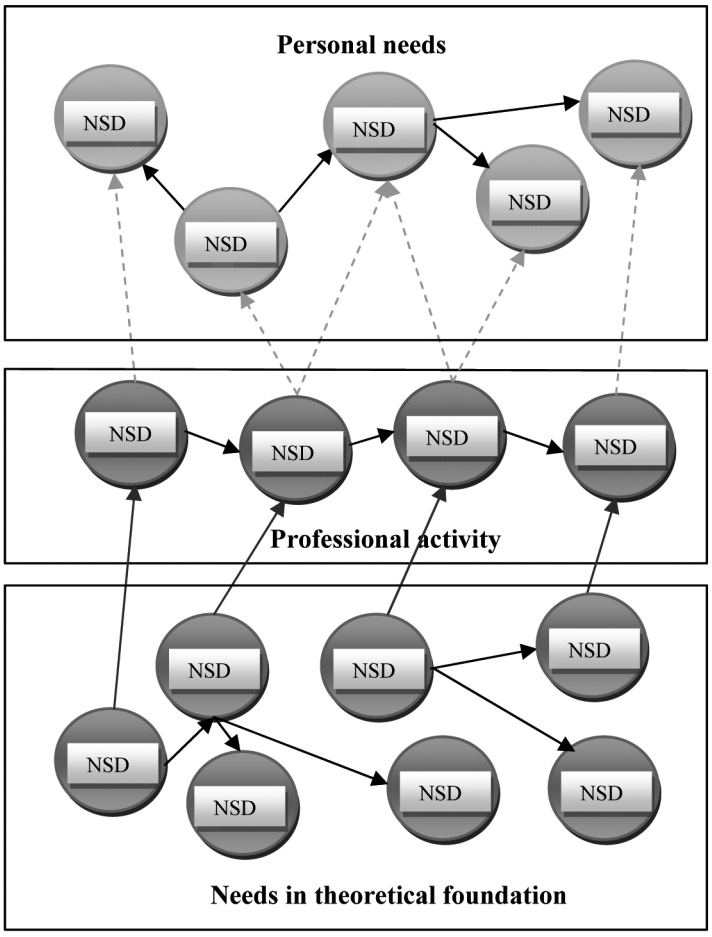

Fig. 2. Hierarchy of private needs

In the Fig. 2 any personal need is represented as NSD, any competence of professional activity is NSD and theoretical foundations are represented as NSDs too.

Professional competences are bound with personal needs. In case of learner these relationships are potential (dotted lines of the Fig. 2). In case of a professional some bonds can remain potential and become real during professional advance.

Representation of the private needs' hierarchy grounds high motivation for learning, optimal organization of learning process, and minimizes waste of strength and time.

Representation of needs in the form of NSD schemata grounds quick and independent mastering of learning content [2].

3. A role of active professionals in the market-driven education

Professional knowledge must be integral part of the learning content. The problem is that professional knowledge is continuously being upgraded. To solve this problem, professionals should continuously change the learning content.

Given professionals' workload, the last request is infeasible.

By our opinion high level professionals will update the professional activity's representation due to the following conditions:

— This representation improves, facilitates and makes more comfortable their activities. In other words, they need these representations.

— Regular update of activities' representations is profitable.

In [3] we suggest a System that continuously guides professional activities (as well as any other) in the modern and future (Cyber-Physical) society.

The System monitors cyber-physical environment (sensors, smart devices, networks, communicating objects including devices used by customers in the course of their activities).

The System, being aware the customers' activities and corresponding Need Satisfaction Domains, processes data of cyber-physical environment and customers' data (via query-answering interface), detects current situation (needs, problems, operating equipment, running activities, etc.) and provides customers with solutions, instructions, explanations).

Due to this System the activities' representations become vital needs, therefore professionals will be motivated to update Need Satisfaction Domains in time.

Modifications made by one professional will be available for all others as well as for all students in the world.

Since the System shares knowledge and solutions on a mutually advantageous basis (a fee, a leasing, an exchange of experience, collaboration), any professional is motivated to publish as early as possible to leave behind others.

Above-mentioned inspires confidence in the active collaboration of professionals with the System.

Any Need Satisfaction Domain includes Training mode for independent learning.

On the other hand Pervasive Guidance of customers' activities, which the System provides, we consider as key educational approach of the Cyber-Physical Society. Therefore e-Learning is an integral part of the System.

Active professionals interact with the System and continuously update activities' representations include resources' representations.

Students and other professionals have an opportunity to learn professional activities in up-to-date form that meets all modern requirements of the market.

4. A role of academic staff in the market-driven education

Academic staff is responsible for the forming a configuration of Need Satisfaction Domains as top level of learning content in the scope of certain professional specialization.

Academic staff consists of professionals in certain scientific fields. As professionals they contribute their experience to corresponding Need Satisfaction Domains.

Academic staff is responsible for the forming a configuration of theoretical Need Satisfaction Domains, as foundations of learning professional activity.

Academic staff is responsible for the update a configuration of theoretical Need Satisfaction Domains in response to every update of professional activity's representation that is carried out by active market professionals.

Thus learning content will form only actual competences, needed in the labor market.

5. Competence

A competence is an ability of doing something.

To M. Bunge [4] an activity is a key component of causality that causes a change of environment:

Initial state → An activity → Final state

To M. Bunge «Final state' is an effect»; «An activity» is a cause. Thus a competence is a cause.

Obviously, a competence processes initial state of environment (Situation) into a final state (Satisfied Need):

Situation → Competence → Satisfied Need

This implies that a competence makes a sense in the context of a needs' satisfaction.

Top-Down e-Learning approach represents any competence as a satisfaction of certain need, i.e. as a component of NSD.

At that a description of any competence has top-down structure.

6. Top-Down structure of learning content

Top-Down e-Learning approach provides learning content as a hierarchy of NSDs (Fig. 2). Any NSD includes a set of competences. Any competence is represented by the following three key levels of description:

1. Scenario of an activity
2. Initial substantiation of the activity's scenario
3. Complete substantiation of the activity's scenario.

Scenario of an activity represents instructions as detailed as possible. Any layman in case of urgent necessity can follow them.

Above-mentioned System, destined for Harmonization of Cyber-Physical Society, provides user with actual instructions via innovative Query-Service Interface.

In the course of Query-Service Interface System recognizes a current user's need or a problem and, given all the available data (including sensors' data, IoT data, information inputted by user, etc.), makes decisions, generates adequate instructions and answers to questions.

Initial substantiation of the activity's scenario provides user with simplified causal-effect relations in the form of pairs:

Initial state → Final state

Such level of competence belongs, usually, to average personnel (or to service staff).

Complete substantiation of the activity's scenario provides user with complete causal-effect relations in the form M. Bunge's triples.

Such level of competence belongs, usually, to major personnel (engineers, technologists, physicians, managers, etc.).

7. Needs driven education

Academic degree becomes a fetish, if it is not bound with personal needs.

In other words, academic degree should be a sub-need of one or more personal needs.

Given above-mentioned we can represent Hierarchy of private needs (Fig. 2) in the new form (Fig. 3).

New hierarchy of private needs (Fig. 3) shows the following logic of motivational ties between private needs:

— Personal needs motivate a need in Professional activity;

— A need in Professional activity motivates a need in substantiation of the activity;

— A substantiation of the activity can motivate Needs in deep theoretical foundation;

— Needs in deep theoretical foundation motivates a need in Academic degree;

— If a substantiation of the activity motivate a need in non-academic education, Academic degree is not necessary.

It is obvious that academic degree is not necessary for large quantity of professions. But young people, as a rule, have in mind generalized model of personal needs' hierarchy, formed by mass media.

Following this model, they strive for an obtaining academic degree. And only in the course of learning many of them understand that their motivation is not enough.

Mostly, this is due to the lack of strong links between the learning content and real needs.

Top-Down e-Learning helps users to build a hierarchy of private needs and provides them with pervasive support of the needs' satisfaction.

According to top-down hierarchy of learning content, mentioned in Section 6, a student first of all learns Scenario of an activity.

Just on this stage he can decide to continue learning or not.

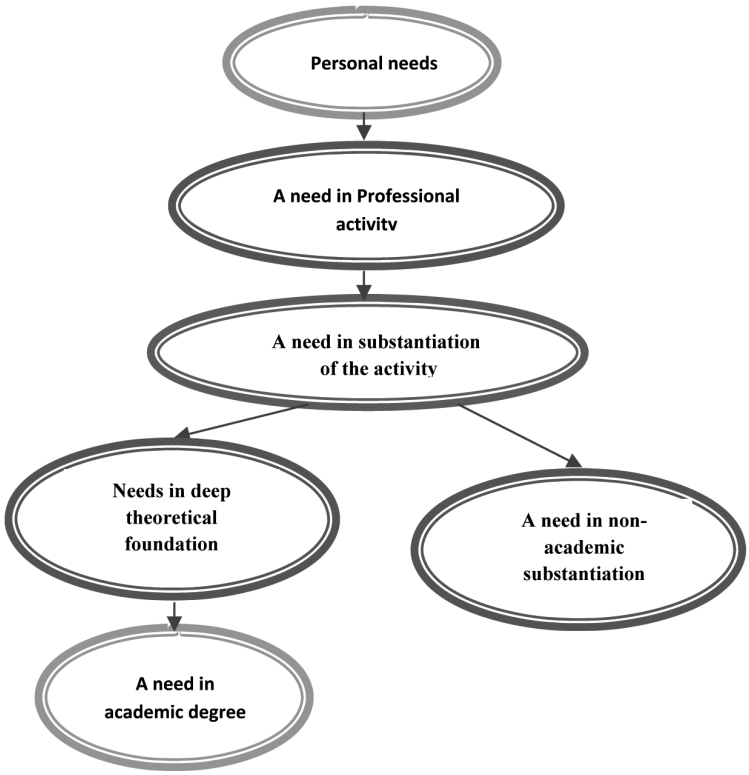

Fig. 3. Hierarchy of private needs

As a result of the second stage (Initial substantiation of the activity's scenario) maybe understanding that personal needs can be satisfied without an acquisition of academic degree.

If not, a learner starts to learn complete substantiation of the activity's scenario, i.e. he starts a mastering of academic Curriculum.

8. Conclusion

Market-Driven Education radically changes both educational landscape and approach to the learning.

Dictatorship of academic councils changes by the market management of education.

Needs driven education generates high motivation to learning.

Top-Down e-Learning approach provides quick mastering of learning content.

Final competences, acquired by learners, meet current market requirements.

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