Knowledge management as a form of student initiative and a tool to increase education efficiency

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Abstract

Relevance of this article is determined by necessity to comprehend and develop new forms of educational process in the context of cognitive revolution that is currently taking place in the field of information and cognitive processes. Object of the article is to reveal the most important forms of educational activities in the system of post-secondary education allowing for competent knowledge management both by students and their instructors. The authors rely on such research approaches as explication, comparison, etymological analysis. Studies of transformation of objectives and content of tertiary education in the context of transition to information society lead to the conclusion about priorities of student initiative and independence as the most important factors in the tertiary education system. It is assumed that the instructor shall empathically put themselves into the student's position to form the experience necessary to be given as an example for organization of educational process and raising efficiency of such process.

1.   Introduction

Cognitive revolution stimulates reconsidering of many established views of person, world and their interactions. It concerns education system as well: its objectives, characteristics, content and their influence upon participants (actors, subjects) of such process, because there is a serious problem there. The problem is the modern education assumes a way of organization and principles of students' and instructors' participation that are different from those used before. And this way of implementing the educational activity does not meet common notion of objective and content of education. Besides, transformation of educational process anticipates deep alterations in both instructors and students. That is why there is a difficulty in organizing the educational system during the cognitive revolution

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when faculty and students still live in accordance with the traditional arrangement of the educational activity (University Research for Innovation, 2010). How can both groups change their ways, develop and implement new approaches? Is it possible for faculty members, who underwent formation, worked and still work in the traditional educational arrangement, to change themselves, to find resources to acquire and implement new approaches?

The authors hold the opinion that the answer to this question is positive. But it is important to understand that the first step has to be made by the faculty. This first step is to put themselves in their own students shoes, literally becoming students. The faculty members have to move first because today they are in a better position to see changes in their instructional activities and education as a whole. The article is dedicated to answering this very question.

2. Scope and Methods of Research

First of all, let us specify the principal talking point of the article: new knowledge, information, abilities, skills, mastery and education as a whole will be obtained with much higher quality if the student chooses them and ways to their mastery. Student initiative (mostly, post-secondary students) is the principal condition for organization of educational process in the modern world that allows to reach the results necessary for the society. Student independence, its representation and competence in its use form the main criterion to assess the efficiency of the modern education.

To prove this point the authors plan to use explication to refine some key concepts and processes taking place in the system of learning and education in the context of establishing information society. The comparison analysis will be employed to demonstrate specifics in educational process organization within the traditional framework as well as within the cognitive revolution framework. The authors also use etymological analysis to reveal additional conceptual meanings of some well-known terms.

3. Results

Cognitive revolution dramatically changed our perception of knowledge and cognition, while education both as a phenomenon and as a practice is tightly connected to our understanding of cognition. Let us demonstrate how traditional education model provided for organization of the education process. It was based upon the so called reflection theory, where human subject served as a passive mirror of a sort, which was able to reflect surrounding world to some detail. Distortions were deemed possible but only due to human neglect, inattention or due to a wish to adapt some features of the perceived object to personal believes about the object of cognition. However the essence here is that cognition and its results have to minimize participation of its human subject. The education system was constructed along similar guidelines: objective knowledge about the surrounding world were differentiated among corresponding school subjects and introduced to students by specialists. The principal task of a student is to master the knowledge, the principal task of the instructor is to transmit this knowledge to their students, the principal task of education is to organize the process of knowledge transmission from the instructor to the student. The student have by any means to master necessary amount of knowledge, which served as a measure of education quality and its level (primary, secondary, tertiary). It was assumed that such knowledge will allow to obtain a certain standing in the society.

The traditional education model is characterized by such features because there always existed notions (sometimes quite vague) what amount of what knowledge is necessary for different professions. At that, it was commonly assumed that education (at least secondary and tertiary) is not a prerequisite. Life had not come to end without education, thus it was a useful but optional part of social life.

Contemporary cognitive revolution shows that the essence and content of education in its traditional form do not fit the realities of the modern world. They don't fit because understanding of knowledge and cognition underwent a transformation due to changes in out ideas of cognitive abilities of a person, because the world we live in changes intensively all the time.

Cognitive process today is more and more interpreted as a construction, rather than reflection. The subject is not seen as separate from the world and thus able to reflect reality outside it. Cognition is a creative process where aspiration to create a certain image of the world becomes prevailing. A person here is in a situation of co-creation,

because only interactions with the society and the world create grounds for construction and allows to create in the full sense of this word (Ardashkin I.B., 2003).

Meaning of knowledge is changing as well. It does not only contain data about the world, its objects and processes. The knowledge becomes a constructive unit, a pattern of human creative efforts. «To know» for a person is not only to be able to reflect the world in a form of cognition, but more to create new images, new constructive dimensions of the world's appearance. This feature is the most pronounced in the intensity of appearance of new knowledge in the modern world. Previously it took centuries to double the amount of knowledge at humanity's disposal, in the last century it took only decades, and nowadays merely a few years. Correspondingly the technologies used to obtain, process and store knowledge undergo changes and in their own turn change the ways to work with the latter.

Traditionally the knowledge was information available not even to every specialist, but today's information technologies and the Internet radically simplified access toany kind of knowledge. Existing easy availability of knowledge in practice initiates a process to transform it into information where the latter is to be understood as subjectless knowledge (the very term information demonstrates the transformation very clearly: «in»-«form»-«ation»; it is a process and a result of formalization of knowledge, its formation).

Cognitive revolution reveals that comprehensive aspect of knowledge becomes less important than it was deemed in traditional epistemology. The world is changing, it is pluralistic and diverse and there is no knowledge that can express it in full. There is a good reason that truth is not the most popular topic in modern epistemology. In the process of cognition the knowledge is just a material, allowing a person to construct, and its content area in not so important. E.N. Knyazeva writes, in her characteristic of constructivist features of modern epistemology, that from the constructivist point of view there are no items of knowledge independent of subject, the knowledge is the product of conceptual frameworks, perception and action schemes. The knowledge shall not correspond to ontological reality, but rather be integrated, fit into the whole structure of experience (Knyazeva E.A., 2008).

The subject acquires initiative in the cognitive process, interacts with the society, with the world, but today such factors are not as much limiting to the cognitive intentions, but rather enriching them. The subject is free in their creative efforts and at the same time responsible (at least it shall stay that way from the point of view of the non-traditional modern epistemology). Interacting with information the subject on the one hand realizes its independent existence and functioning, but on the other hand it acquires liberation (awakening), a creative anticipation allowing to activate independent stages of cognitive intentions. Information technologies that frame the "knowledge-to-information" transformation practically nullify the importance of content (the subject is not required to reflect reality in its cognition through knowledge). They update the knowledge development aspect, process component of its creation, functioning and storage. That is why the accent in knowledge mastering is not on the result, but rather on its procedural character. A question arises about knowability of knowledge in its generation. What is meant here is not so much what kind of truth is revealed as a result of cognition, but rather how this truth is revealed, how one can detect its birth and its further transformation in acts of its obsolescence and infinite informational generation as a new one. Modern epistemology puts accent on the cognitive processes, skills, capabilities, competence in capturing movements of the truth. In the conditions of informatization it is no longer required to master a stable sum of professional and cultural knowledge (because there is no such stable sum nowadays). Cognition in the age of information is mastering the ways and methods to obtain knowledge, skills to easily familiarize oneself in a rapidly changing world (Petrova G., 2012).

State of liberation of the subject defined by informatization processes allows it to renew the existing knowledge by giving it a form and free one's hands for execution of cognitive efforts. Exactly this result of the cognitive revolution deprives a person of a possibility to stay as a passive observer. That is why education as a tool for socialization and cultivation becomes a requirement and not an option. Education today becomes necessary life-long personal strategy where one is not so much receiving knowledge but rather generates it and learns how to do it. Of course, all the things mentioned above influence the education process, as well as its objective and content.

It is obvious that education becomes a key factor in development of modern society where a person does not obtain education once, but rather is constantly being in the process of education. One must not only know three Rs, but also know how to use a personal computer as a pivotal tool of information technology, and use such technology

in one's activities. These very skills may allow a person lacking certain knowledge in some area to promptly obtain such knowledge.

Information technologies make us think why a person shall master any amount of knowledge at all, if a data base will always allow to have at hand volumes of information far exceeding one's abilities. Besides, even if a person strives to remember some part of information, it quickly becomes useless in the modern dynamically developing world. Knowledge is renewed and changes rapidly, and one person cannot succeed in tracking such transformations. G.I. Petrova and Y.M.Stakhovskaya write that information in its infinite streams cannot define social limits, frames, boundaries. They are constantly changing and together with movement and changes of information the society, having lost its stability, changes as well. Now it is represented with process, movement and change (Petrova G., Stakhovskaya Y., 2010).

Traditional education system was built upon principle of knowledge transmission with the main idea being transfer of knowledge from a more experienced person to a less experienced one. The very term traditional education bears this meaning etymologically: traditio is translated from Latin as transmission. Tradition is a social and cultural scheme defining devices of generation, accumulation, storage, transmission and transformation of knowledge and experience (Baranez N.G., Fedoseyeva E.Y., 2012). The main principle of any traditional process (including education): accumulation, storage, transmission.

Process of social development leading it to information-dominant stage and represented by a cognitive revolution (transformation of knowledge into information), shows that traditional educational mechanisms are insufficient for social functions. Indeed, what is the point in accumulation, storage and transmission of information if it becomes obsolete all the time. In such case education as a social institution is either unclaimed, or supposed to change, find new forms and devices.

This situation makes us to turn to the question of objective of education and its necessity for a person in the modern world. As stated above, transmission of accumulated knowledge and experience may no longer be such objective. Earlier such objective was associated with getting a profession, obtaining a standing in a certain area of expertise, because it was held that profession is obtained by mastering a certain set of knowledge and experience.

Today constant dynamics of life, fluidity of knowledge make us forgo such understanding of education objective. But what is that objective for the modern society?

To clarify the question of educational objective in the modern society let us consider etymology of the very word образование, (obrazovanie, Russian for education). This word descends from the word «образ» (obraz) meaning figure, image, picture, icon (Fasmer's etymological dictionary, 2014). The word «образ» itself is formed from the prefix «об» and the root «раз». Fasmer's dictionary clarifies that «initially the root "разъ" is formed by vowel graduation from резать (to cut). Cognates are Lithuanian ruozas "stripe, line", rezti "tu cut, make line", Latvian. ruoza "hill, height; stripe, meadow, row", Greeek ρωζ m. f. "crack", ρηνυμι "I tear, break"» (Fasmer's etymological dictionary, 2014). So, education is an activity connected with formation of images. And image is a limit (stripe, line, row), that have to be overtaken (cut, torn, broken). Thus an image is a figure where boundaries require redefinition.

For education the image should be considered as a world view, formed by a person through acquisition of a certain experience and knowledge. In the traditional education the image, view of the world was not so much formed but more transmitted and received from generation to generation with necessary additions. In the non-traditional educational system this objective remains as one of many functions, while independent formation of world view (image of the worlds) becomes the primary objective. At that it is necessary to clarify that formation of independent world view becomes possible only due to competence not only in finding or creating new knowledge, but in operating with it as well. Today creation of a certain information, idea, image is insufficient, these structures have to be put to use. Such application of knowledge is termed innovation. The latter is a new way to operate with knowledge and experience which is a tool of social development. Its essence is that everyone gets possibility to be an engineer of social processes, the principle requirement is positive character of such processes, however, it is hard to guarantee. Or, in the words of G.I. Petrova and Y.M. Stakhovskaya, the changes being described may be stated as exchange of tradition for innovation as a social development device and management of social processes reacted to this change with cognitive management strategy. This strategy is based upon studies of the new development device – innovation (Petrova G., Stakhovskaya, Y., 2010).

When innovation is a method of social development the objective of education may be defined as formation of independent world view for a person in changing reality and its maintenance in up-to-date condition. The management of this image is the most important moment of educational process coming from the aspect of maintaining the formed world view in the state of correlation with dynamics of knowledge and information.

Image management is the main objective and content of non-traditional education. The management aspect corresponds with the dynamics of development that is determined by process of transformation of knowledge to information (or, in other words, formation of information society). Nowadays it is nor enough to simply form your own cognitive image of the world, it is more important to constantly adjust it, which is impossible without management functions. This necessity is clearly demonstrated with morphological analysis of the word «управление» (Russian for management, control), where the root is «прав», cograte of the verb «править» (to rule). Thus, to manage is «to lead, direct one's movement, accomplish, execute, correct mistakes, furnish, form, fashio» (Ozegov S.I., Shvedova N.Y, 2014). Image management assumes constant introduction of changes in the content of image and maintenance of a state of readiness to introduce such changes. If image management meant support of conformance to the correct world view and its reproduction in perception for the traditional education, for non-traditional education the image management assumes readiness to create independent image, impossible without correction, formation and so on of the existing experience and knowledge, without leading them in the necessary direction. In other words, image management is management of knowledge and experience and it is not just preparatory period in a person's life, but its main strategic line.

Image management (knowledge management, experience management) highlights dynamics of life, the modern world, rapid character of processes (including knowledge-to-information transformation process), thus making a person to concentrate on the future rather than on the present. The future is in the state of constant approaching and at that it is bringing in maximum indefiniteness (Nam P. Suh, 2010). And if a person is not ready (image management is the demonstration of such readiness), the future is unlikely to be positive. The objective of education assumes that a person will be prepared to any twists of fate by being trained to manage their knowledge (world view). This idea is partially supported by conclusions made by A.V. Borovskikh, N.H. Rozov in understanding of objective and content of education in the context of pragmatist approach. They sum up that reliance on pragmatics allows for solution of the education objective problem. The objective of education is a preparation of a person to future activities in the society, while the content of education is a mastery of general methods and forms of human activity. Content area is just a device, material (Borovskikh A., Rozov H., 2012).

It is necessary to clarify right away that traditional devices of education are not dissolving into thin air. Image (knowledge, experience) management is impossible if not based on receiving and transmitting the experience. This device is just no longer seen as the basis of educational activity. Or, more precisely, primary level of education and parts of secondary education are still going to be based on the traditional form of education. Tertiary education however is oriented towards non-traditional devices where the principle objective is competence in management of knowledge and experience, because this very level of education is concerned with preparation of specialists that are destined to work in conditions of cognitive revolution and information society under formation.

And here we see the problem that was stated in the very beginning of our article. How should we organize training of students (most notably, tertiary education students) in a situation of transit from traditional devices of educational training to non-traditional while taking into account difference between them in objectives and methods? Today it is obvious, that non-traditional education system appears still as a modeled structure reflecting ideas of education process organization in concord with social and economic trends of social development. However in practice the traditional educational system prevails despite not being able to provide students with the quality of training required for full-scale development of the society. Theoretic aspects of training dominate thus the students receive quite large amount of knowledge («capacious cognitive image of the world»), but in practice they have neither an idea what to do nor how to apply the knowledge received. In the words of one of the leading teaching specialists M.T. Gromkova, our education allows its graduates to be «world champions in crossword puzzle solution», but in a practical area they experience significant problems in applying their vast knowledge (Gromkova, M.T., 2002). It is obvious that the assessment is directed towards statement of a simple conclusion: knowledge and

experience (world view) management cannot be a result of Russian tertiary education (there are some exceptions though).

At the same time it would be wrong to say that nothing is being done. New (third generation) Federal educational standards were accepted for execution in the Russian Federation. Formation of professional and general cultural competences in future bachelors and masters is presented as a principal objective of education. «Knowledge» component (content) is seen not as a primary objective, but as an important mean to reach the objective. It complies with the spirit of the transformations experienced by education as a social and cognitive institution at the stage of transition to the information society. It is another matter, that the transition to new standards does not remove the question of their necessary practical application in education: how can instructors and students habitually working along the traditional scheme transit to such a way of interaction where transmission and receipt of knowledge will be replaced with skill formation and competences in managing the skills? It is understandable, that such transition assumes real revolution in consciousness and behavior of education participants.

The authors hold that the first step towards such revolution should be made by instructors. There are several arguments for this. First of all, the instructor have a more vivid view of necessity to change the educational process. As a specialist with more knowledge than that of a student, the instructor a priori understands how difficult is to learn to apply the knowledge to practical tasks. The second of all, a personal example is always better, more demonstrative, authentic, than multiple talks about how we should improve education process. The third of all, the most important condition for mastering the competence in knowledge (image) management is the personal initiative, which is practically impossible to be induced from the outside.

Management as process is actually a constant initiation of idea generation within oneself. That is why by giving an example in construction of one's own world view, knowledge management, the instructor places themselves in the student's position and may better understand what can be done to help student, what advice may be given, because there is a personal experience of a similar situation. E.N. Knyazeva writes on the characteristics of the modern education, that it becomes interactive. Not only an instructor teaches a student, but the student teaches the instructor as well, they become co-operating subjects, peers. The instructor shall learn to see what is behind the student and learn how to understand it. In the process of training an unknowing person becomes a knowing one, while the instructor undergoes changes as well, similar to that in psychiatry, when a sick person turns into a healthy or at least recovering one, but doctor also changes during the process of testing their sanity and in most cases strengthening it (Knyazeva E.A., 2008).

Knowledge (image) management is possible as an educational strategy only due to development of active student initiatives. There are unlikely any arguments against the notion that activation of student initiative which assumes endowing them with freedom of independent organization of education process will improve the quality of training. Difficulty here is that there is no single answer to another question: how shall we do it? That is why the idea to activate instructor's position in the process appears an inventive but feasible step. Being given an example of individual creative activity the student will be guided towards revealing their own heuristic qualities thus obviously improving the quality of their education, because independent, non-trivial actions are going to be encouraged.

A person who can build their own educational trajectory will certainly be able to build their life trajectory as well, the more so because in the information society these trajectories coincide. That is why independent world view, image of the future that the student forms in their consciousness is more understandable and attainable if the person understands their control over those images.

4. Conclusion

Effectively we may state that the cognitive revolution sets the formation of competence to manage knowledge (world view), both generated from experience and constructed anew, as a primary objective of education (first of all, tertiary education). Knowledge management as a strategy of education is possible only as an independent project of a student, as student's initiative to form one's own world view. In other cases we cannot speak about formation of competence to manage knowledge. The freedom to define degree of student's independent initiative in the education process determines its efficiency.

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