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Innovations as Synergetic Effect in Socio-Pedagogical System of Distance Education

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The purpose of this article is to study distance education through the innovations in its interaction and interrelation with such innovative processes, as modernization, integration and humanization, taking place in education. A synergetic approach is a leading methodological approach in our research. This article also considers socio-pedagogical approach which allowed the author to define the interrelations of integration, modernization and humanization and to reveal their influence not only on the internal components (elements) of distance education as a holistic system, but also to define the possibilities of distance education in the implementation of innovative processes. As a result the study showed that «innovation» is a priority idea, on the basis of which the integration processes, education modernization and a humanistic approach to education are functioning and are being combined in the educational space. Innovations come out as display of the synergetic effect in the socio-pedagogical system of distance education. Distance education founded on the modern information and communications technologies application in the educational institutions ensures the cohesion of the educational system to the demands of the XXI century and will permit to raise the quality of education and reach the correspondence of education to the perspective requirements of personality, society and state development.

Keywords: innovation, synergetic approach, socio-pedagogical system, distance education, information and communications technologies, integration processes.

Introduction

Social and economic changes in Russia are connected with the processes of modernization, integration, humanization, introduction and application of innovations. These processes are realized in education. The distinctive feature of education development in the modern world is an active application of information and communications technologies (ICTs).

Research actuality is defined with the socio-economic, socio-pedagogical and socio-cultural

situation which our country is in. The education system modernization is connected with the active introduction and application of the modern ICTs in the process of education in the conditions of the international educational integration.

«Russia needs an innovative break-through first of all in the field of information technologies». «It's necessary to provide an access of all the Russians to the World Wide Web resources, to apply the digital technologies in the information field». The improving of life quality should take

place not owing to the source of raw materials but owing to the innovative economics, creation of new technologies (Medvedev, 2010) and as a consequence the innovations in the education system.

Modernization of education should be founded not only on the organizational innovations but on the changes in the content, student teaching technologies that will promote the transition of modern society to the global information society.

Strategy of Science and Innovations Development in the Russian Federation up to 2015 is called to provide the combined effects of government, private business and civil society institutes on ensuring of «the dynamic and purposeful» development of the Russian Federation in the field of science and innovations up to 2015 and for the subsequent perspective. Transition of the leading countries to a new stage of the innovative society formation is the distinctive feature of modern world economic development. High level of proficiency, unique skills and abilities, a skill to adapt them to the constantly changing conditions of activity are becoming the main factor of welfare standards and social status of personality. Investment in intellectual capital is the effective way of the resource placing. Application of new scientific and technical results predetermined the sharp shortening of the innovative cycle. The place of Russia in the world innovative processes doesn't correspond to the intellectual and educational potential of the country. The given situation may lead to the loss of the national competitiveness in the world markets of scientific capacity produce, «the irreversible falling behind in the time of the transition of the leading world powers to the technologies of the post-industrial structures» (Strategy of Science and Innovations Development in the Russian Federation up to 2015, 2006).

The importance of education as a new quality of economics and society formation factor is increasing in a modern rapidly changing, fast-moving world. The education system of Russia is able to compete with the education system of the leading countries, but in this case it's necessary to have a public support of the educational policy being conducted, restoration of a responsibility and an active role of the state in this field, the all-round modernization of education with the allotment of the necessary resources and with the creation of the mechanisms of its effective application (Andreyev, 2005, pp. 108-109). The main principles of educational policy of Russia are represented in the National Doctrine of Education in the Russian Federation up to 2025 (National Doctrine of Education in the Russian Federation up to 2025, 2000).

Innovations in the socio-economic field influence on innovations in the educational system. Education playing the social function shows the changes in a society. Education development level is the showing of the socio-economic level of the country development. Innovations in education are the consequence and the necessary condition of the society development.

In this aspect, it is necessary to rethink the university structure and meaning, taking into consideration the new social requirements: the process of globalization, the changing demands of social practices, the increase in competitiveness, technological development, the rapid obsolescence of knowledge, the need for lifelong learning, changes in the production of knowledge, the importance of online learning and work (Bosco, Rodriguez-Gomez, 2011).

It's difficult to reach the socio-economic progress without the high qualified specialists having the innovative thinking, the unique skills and abilities and a skill to adapt to the fast-moving world. Modern specialists should use their initiative and take decisions themselves,

use information and technologies to innovate and keep ahead of the competition in the today's world. Innovations in education are not only the pedagogical problems but they are the social ones. Innovations taken place in an education and a social life should promote the progress. Innovations in the field of information and communications technologies penetrated not only through the society but through the educational system.

Theoretical framework

«The peculiarities of the pedagogical problems are in that they have many aspects. That's why, the foreshortening, the researcher's view, his strategy of consideration and investigation of the problem is important in the working out of the problems» (Andreyev, 2005, p. 357).

Our foreshortening of the consideration is an innovation, distance education study through the innovations in its interaction and interrelation with the innovative processes taking place in education. The synthesis of such processes as the modernization, integration and humanization should «work on» the innovations.

It's important for our research to consider the etymology of the term «innovation». The term «innovation» is derived from the Latin word «novatio». The meaning of this word is «renovation» or «change». The prefix «in» is translated from the Latin language as «in the direction of». The literal translation of the word «innovatio» is «in the direction of the changes». For the first time the notion «innovation» was appeared in the scientific researches of the XIXth century. At the beginning of the XXth century the notion «innovation» got a new life in the scientific researches of the Austrian economist of I. Schumpeter as the result of the analysis of the «innovative combinations», changes in the development of the economic systems. And what is more this notion may be

used to the creative idea which was realized (Wikipedia, 2012).

An innovation is not every renovation or renewal, but that which seriously increases the effectiveness of the existing system (Miloslavsky, 2009).

The newest philosophic dictionary gives the next definition of the notion «innovation» – «(the late Latin word «inovatio», the English word innovation) are the phenomena of the culture which don't exist at the previous stages of its development but which appeared at a given stage and obtained the recognition in it («socialized»); (fixed) in the form of signs and (or) in the activity with the help of the changing ways, mechanisms, results, content of this activity» (Gritsanov, 1998).

The term «innovation» is used in education and means «novelty»; the process of creation, assimilation, «and application of the pedagogical scientific and technical achievements» (Simonenko, 2005, p. 343).

A synergetic approach is used as a methodological base in our research as «a distance education system is an open system» (Cyrs, 1997, p. 55).

Synergetics (the word is derived from the Greek word «synergeia») – «the science which studies the processes of the complex systems transition from a random status to an orderly and reveals the connection between the elements of this system, where the combined action in the system has more than a simple addition of action effects of each element separately» (Kodgaspirova and Kodgaspirov, 2005, p. 308).

Synergetics is one of the methodological principles for pedagogy. Synergetics studies the open systems, exchanging the matter, energy and information. The emergence of new information and communication technologies expands the possibilities of distance education and has an impact on the peculiarities of functioning of the

components of distance education system, on its regularities, methodological guidance.

The innovative processes in education – integration, modernization and humanization are considered in our research not isolated from each other but as a system.

A synergetic approach puts the main emphasis on the study of the open systems, where the system is considered from a position of self-government, self-organization and self-development. The principles of systemness and integrity are in the basis of synergetics.

The laws of synergetisms are of interest for distance education as a socio-pedagogical phenomenon and for distance education pedagogy.

«A synergetic approach deals with such self-organizing, self-developing systems as bio-systems and social systems» (Kodgaspirova and Kodgaspirov, 2005, p. 56), and distance education is a socio-pedagogical phenomenon, a socio-pedagogical system. That is why a synergetic approach as a leading methodological approach was chosen in our research. Distance education pedagogy as a system of scientific knowledge is being developed in the framework of a social system. Distance education pedagogy is a subsystem of the more common system.

The notion of «synergy» (unity) is revealed in the context of the analysis of self-organization and self-development of the large systems. It is a socio-pedagogical system of distance education in our research.

There was made an attempt of philosophical understanding of a synergy theory in the 80s, as a synergetic approach deals with the self-organizing, self-developing systems, which include the bio-social systems, the «ideas of synergy, a synergistic approach as a philosophical and methodological principle is applied for the research of educational systems» (Andreyev, 2005, p. 57), and in our scientific work for study of

distance education system as a socio-pedagogical system.

A systems approach was used to study distance education as a socio-pedagogical phenomenon. A systems approach is one of the most important methodological approaches aimed at the research, analysis and synthesis of the complex systems, including the pedagogical ones.

Understanding the essence of the pedagogical, social, psychological and economic phenomena is a necessary condition for successful and stable functioning of distance education in the modern innovative conditions. In addition to the systems approach, it is used the socio-pedagogical approach in our research. This approach allowed us to define the interrelations of the above-mentioned phenomena and to reveal their influence not only on the internal components (elements) of distance education as a holistic system, but also to define the possibilities of distance education in the implementation of the innovative processes.

Statement of the problem

Implementation of innovations, advanced information technologies should contribute to improving the quality of life and education. The level of science and technology development, introduction of the innovative education technologies influences on the system and the quality of education (Tolstova, 2011).

Innovations in the field of information technologies will find its realization in the educational system. Distance education (DE) directly connected with the use of information technologies acquires a new form, more perfect one. It will be available for each educational institution and a student.

Distance education is «an innovative educational form» (Zaichenko, 2005, p. 55). «Distance education is one of the most dramatic

of the recent technology-based innovations influencing education» (Simonson, Smaldino, Albright, 2006, p. 5). Innovations connected with the application of the newest ICTs in the distance education system increase its quality and contribute to the realization of the principle of democratization – one of the leading principles of education. Democratization is a tool of society transformation. It has influences on the educational system as one of the subsystems of a social system. Therefore, democratization influences on a socio-pedagogical system of distance education and is manifested in the inherent features, for example, «sociality» – DE provides an equal possibility of getting education regardless of the place of residence and the financial conditions; «internationality» – DE provides a convenient opportunity to export and import educational services. Thus, distance education provides a wide access to the educational domestic and global resources.

The democratic processes development in a society contributes to the revaluation of the educational system, its goals and objectives. Transformations in a society require changes in education. The goal of the Russian system modernization is to provide the compliance of education system with the requirements of the twenty-first century, to create the education system stable development mechanism. Education should correspond to the social and economic needs of the country development.

Modern distance education contributes to the solution of tasks necessary to achieve the mentioned goal. Distance education is aimed at the maintenance of the availability and the equal opportunities for full-fledged education and the development of a new modern quality of education, the improvement of professors' professionalism.

Distance education based on the advanced use of ICTs allows us to solve the problems of

educational policy at present stage, i.e. to achieve modern quality of education and the compliance of education to the current and prospective needs of personality, society and state development.

Innovations associated with the introduction and the active use of ICTs in a society and education are both the result and the effective means of transformation of a society and education.

There is the Educational Systems Level and the Social Systems Level of distance education in a hierarchy of distance education systems proposed by Saba (Saba, 2007). The synergetic approach manifests itself in a socio-pedagogical system of distance education. The effect of interaction between the aggregate components: integration processes in education, education modernization on the basis of introduction and application of modern ICTs and humanization of education is more than a simple addition of effects of the actions of each of the components separately and manifests in innovations.

The innovative processes are represented by **the integration processes**: the preservation of the common educational space with the CIS countries, the Bologna process, integration into the world educational space; **the modernization of education on the basis of modern ICTs**, innovative technologies in the education system, taking into account the fact that modernization should include the moral dimension; **a humanistic approach to education** (Tolstova, 2007) in modern educational space.

«The innovative processes in an education system» are defined as «the managed processes of creation, perception, assessment and application by the pedagogical community of pedagogical innovations, which are considered in unity» (Kodgaspirova and Kodgaspirov, 2005, p. 245).

«Innovation» is a priority idea, on the basis of which the integration processes, education modernization and a humanistic approach to

education are functioning and are being combined in the educational space. In a socio-pedagogical system of distance education synergetic effect is manifested in innovation. Innovation has the qualities exceeding the qualities of every component which is a part of this system. Innovation has the superior quality of each of its components.

A modern society is characterized as an informative one. There is a growing need in the means of information production, its storage and application. Increase in the flow of information in the life of a human – being causes the application of electronic means for the work with information. Electronic educational resources of a new generation are being implemented in a modern educational process and significantly modernize education. «Developments in technologies have often played a critical role in bringing about social and institutional change» (Collins, 2009, p. 9). The whole of life and human activities are being imbued with the ICTs .

Using dialogues in networked online learning environments (e-learning dialogues) in education is topical. A dialogue is one of the most important components of any learning process. «Educational research has shown that more effective learning takes place if learners are actively involved rather than passive listeners. This has brought a move towards more student-centred experiential learning» (Webb, Jones, Barker & Schaik, 2004, p. 93). Thus, a humanistic approach displays itself in distance education.

A web-based learning system is a promising learning environment for the twenty-first century. There are advantages in having learning activities implemented via the Internet. For example, anyone can access information, resources and knowledge from anywhere at anytime (if a student has a computer with an Internet connection). Web-based learning systems permit global accessibility and help to promote worldwide collaboration (Yu,

Liu, Chan, 2005). Web-based learning systems make fast the integration processes in education.

Methods

A theoretical inquiry was used in our research, i.e., a theoretical review of literature and conceptual study for proposing new ideas in distance education. An evaluation research is aimed at determining the impact of the innovative processes (the integration processes, the modernization of education on the basis of modern ICTs, a humanistic approach to education) on distance education system. A developmental research is aimed at developing and evaluating an existing and newly developed socio-pedagogical system of distance education.

Discussion

Innovations in the ICTs are realized in the society and in the education system, for example, blogs, social nets, company news, Cyrillic domains, public Internet-services, Internet-film festivals, new trade formats – the electronic exchange, Internet-stores and other types of distance trade, electronic registrar, used in medicine, and finally, widely spread in recent times distance education.

Thus, the Bank of Moscow clients can «touch a financial innovation», it is the so-called «the bank of future» – a new department of the Bank of Moscow Digital Office. At the bank one can watch «the wonders of modern technology». So, a big video-wall is built into the window – the window of the bank. The sensors react to the movement and allow the clients to manage the image from the street. The virtual buttons are located on the sides of the panel. If you click on these buttons, you can get information about the products, services and terms of service. When a client needs to make a monthly payment, then he has to stand in a queue to the ops officer, put his signature in the payment papers, and then pay for

them on hand. Using information and payment terminals with the touch displays, the client of the bank will do everything himself for a short period of time several times touching the screen. The clients of the bank may enter into a personal office, access their accounts and cards, fill up them, place money on deposit or pay the fee for the loan. In this bank there are also a number of automated teller machines (ATMs) of Smart Cash which represent a tiny office of automated maintenance. An information kiosk, an automated teller machine and a system of communication with a video call-center of the bank, in case of questions or problems, are combined in one unit. The zone of interactive self-service is located in the main hall. The workplaces with the computers are at the disposal of the clients. You can fill in the questionnaire and the application, log in to the website of the bank and use the services of Web-banking, make payments and work with their own accounts with their help. An access to such services is ensured within 24 hours a day, 7 days a week. An electronic cashier is a product of an engineering-banking thought. It works at times faster than a «live» cashier. An electronic cashier is a hybrid of a powerful safe box, the counter of banknotes and the determinant of the authenticity of banknotes. A unique technology – «an automated banking system» (ABS) combines all these parts (Semyonova, 2011).

These innovative solutions are planned to use not only in the Moscow offices of the bank, but also in the regions of Russia.

The modern ICTs form «a special intellectual environment». For example, every modern University that meets the requirements of time should be equipped with a smart-campus, the University area may be covered by the Wi-Fi network, which will allow the students to listen to the lectures at a distance.

The training programs should be not only in Russian, but also in English, to get education in

Russia was prestigious not only for the Russian students, but also for the foreigners. Russian students, if they wish, can also attend the English language lectures. The language training should be intensified for them.

Thus, the universities of Russia will be able to confidently integrate into the world educational system, being the core of science and education in Russia.

Modern science is international one. So there are no borders for the scientists and professors. The scientists and professors should constantly «develop themselves», cooperate with their colleagues from other countries, share experience, participate in conferences. The ICTs help to accelerate and improve such contacts.

For example, the XXVIIIth Congress of the catarrhal surgeons held in September 2010 in Paris at the Congress center of «Concord». It was a great international event. In conditions of full openness the world leaders in surgery shared with pleasure their latest theoretical and practical achievements with the colleagues. The Internet was also used there. The electronic poster presentations were organized to widen the acquaintance with the latest technologies. The terminals with the computers for Internet access which created the conditions for the viewing of posters were located in the halls of the Congress building. The reports of interest could be printed on a color printer.

The use of modern information technologies will allow the professors to intensify the scientific contacts, i. e., to exchange the experience and knowledge at the scientific video conferences and the video workshops, to diversify and to optimize the traditional teaching, to involve in the process of teaching in the mode of the video conference the well-known scientists, professors, educators with the world name, regardless of their nationality, citizenship and territorial remoteness. The modern information

technologies allow the teacher and the students to see and to hear each other in the real-time mode. Professors can work simultaneously with several audiences of students located in different parts of the globe. They have the possibility of interactive communication. The students will be able to learn from the world-class specialists, from their experience in different branches of knowledge not leaving the walls of their native University.

In modern universities it is necessary to create an environment in which each student will be able to get an impulse for the development of their intellectual and creative potential. Universities should be equipped with the multimedia classrooms, the interactive classes, the research laboratories, the congress-centers of the world level, which should contribute to the formation of a new University community with a high information culture and the cult of educational innovation.

There is an active process of ICTs introduction to schools of our country: the computers with Internet access, the interactive boards, the electronic textbooks, representing a device which has the size of a book and includes an interactive tutorial and a notebook for doing the tasks.

Thus, in 2011 4.5 thousand teachers of the Samara Region had got the laptops. Absolutely all teachers will be provided with the computers within a period of three years.

Due to the wide introduction in the educational process of ICTs and the use of the Internet in the educational process, pupils and students need to know how to make a more secure communication on the Internet, avoid harmful information. The students are not always able to evaluate the accuracy of the information and recognize manipulative technologies in

advertising. The students should be critical to the information products, knew about the dangers awaiting them on the Internet and how to avoid the Internet addiction, etc. At present the idea of introduction the course media security to schools is worked out.

Conclusion

Thus, innovations come out as display of the synergetic effect in the socio-pedagogical system of distance education. The effect of interaction of the whole complex of components: the integration process in education, the modernization of education on the basis of introduction and application of the modern information and communications technologies and humanization of education exceeds the ordinary composition of action effects of every of the components taken separately and displays in innovations. Innovations connected with the active ICTs application in society and education are simultaneously the results and the effective means of society and education remaking. Distance education founded on the modern ICTs application in the traditional teaching-learning process in the educational institutions ensures the cohesion of the educational system to the demands of the XXI century and will permit to raise the quality of education and reach the correspondence of education to the perspective requirements of personality, society and state development. Our country will easily integrate into the world educational space and go away from the non-effective education models to the progressive ones based on the new generation electronic educational resources introduction in the educational process. High technologies and educational innovations won't be the abstract conceptions but they will come into the everyday life of a student.

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Иновации как проявление синергетического эффекта в социально-педагогической системе дистанционного обучения

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Цель статьи состоит в изучении дистанционного обучения сквозь призму инноваций в его взаимодействии и взаимосвязи с такими инновационными процессами, как модернизация, интеграция и гуманизация, имеющими место в образовании. Ведущим методологическим подходом в исследовании является синергетический подход. В работе также используется социально-педагогический подход, который позволил определить взаимосвязи модернизации, интеграции, гуманизации и выявить их влияние не только на внутренние составляющие (элементы) дистанционного обучения как целостной системы, но и определить возможности дистанционного обучения в реализации инновационных процессов. Проведенное исследование показало, что инновация является приоритетной идеей, на основе которой функционируют и объединяются в образовательном пространстве интеграционные процессы, модернизация образования и гуманистический подход к обучению. Исследование доказывает, что дистанционное обучение, основанное на использовании современных информационно-коммуникационных технологий в образовательных учреждениях, обеспечит соответствие системы образования требованиям XXI века, позволит повысить качество образования и достичь соответствия образования перспективным потребностям развития личности, общества и государства.

Ключевые слова: инновация, синергетический подход, социально-педагогическая система, дистанционное обучение, информационно-коммуникационные технологии, интеграционные процессы.
