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Nature and Principles of the Phenomenon of Higher Education Integration: Mechanisms of Implementation, Pros and Cons, the Effectiveness and the Management

Aida R. Nurutdinova[a], Elena V. Dmitrieva[b], Liliya R. Gazizulina[a], Natalya M. Tarasova[a] and Elvira I. Galiullina[a]

[a]Kazan National Research Technological University, Kazan, RUSSIA;
[b]Kazan State Power Engineering University, Kazan, RUSSIA.

ABSTRACT

This article is focused on the nature and basic principles of the phenomenon of higher education integration: its mechanisms of implementation, its pros and cons, its effectiveness, and management. The leading methods in the study of this problem are the observations, conversations, and pedagogical experiment, allowing checking of the effectiveness of the proposed organizational and pedagogical conditions of higher education integration. The article deals with (from the standpoint of the unity of nature development, human society) views on idea of integration and the idea of education identified the need for this study, brief results, the conclusions of which are listed below, can be the basis for the formation of the goals of the integration processes in modern education and mechanisms their implementation. The paper submissions are of a definite value for the organization in the system of higher education.

KEYWORDS
High education; modernization; integration process; science and entrepreneurship; pedagogical retraining system

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Introduction

Although universities have developed since the 1980 - 90s witnessed a new wave of interest to issues of integration in higher education (Wolfson, 2002; Dzhurinskiy, 1993, 2004; Ivanov, 2002, 2006; Kovalenko, 1997; Malkova, 1983, 1998, 1999; Nikandrov, 1978, 1995 and others).

Growing interest in higher education integration can be explained by different reasons. Firstly, the process of integration of the economy and labour markets pushed demand in competent workers with knowing of foreign languages, social and intercultural skills. As world economies become increasingly inter-connected, multilingualism and intercultural skills have

CORRESPONDENCE Aida R. Nurutdinova ✉ rstmvn@yahoo.com

grown in importance on a global scale. Secondly, an export of educational services has become one of the sources of revenue for higher education institutions (HEIs) and national economies in many countries.

Today, with increasing internal and external pressures Russian universities as well as many universities in the world are expected to develop strategies in all areas, including the integration to make their competitiveness appealing to both domestic and global markets (Negrebetskaya, 2003; Ivanov, 2006).

Russia's education has traditionally been seen as a crucial resource for the country's progress. Since the Soviet era, Russia has boasted a wealth of experience in attracting foreign students. It should be noted that the Soviet Union used higher education mainly as a geopolitical tool and as an "ideological weapon" especially during the Cold War. With 126,500 foreign students enrolled in 1990, Russia was ranked among the first 10 countries in the world providing academic services for foreign students (Sheregi, Konstantinovsky & Arephiev, 2006). However, after the break-up of the Soviet Union, Russia's share of the world's educational services market has been on a steady decline.

The higher education integration has become a pressing issue over the past years and the Russian government has paid attention and made a lot of efforts to universities (Mayburov, 2003; Saldak, 2007; Sagitova, 2010).

Recent initiatives of the government in the area of higher education include innovative educational projects, development and support for national research universities and most recently, the international competitiveness program (Concept of Modernization, 2002; Concept of the Foreign Policy, 2013; Decree of the President № 599, 2012; The Russian Federation Government Resolution №219, 2010; The Russian Federation Government Resolution №218, 2010; The Russian Federation Government Resolution №220, 2010; The Russian Federation National Security Strategy until 2020 №537, 2009; National doctrine for education of the Russian Federation, 2000; Federal strategic program for the development of education for the period of 2006–2010, 2005).

Why are the government and HEIs interested in integration activities? A clear understanding of rationales or motives is significant because, they dictate the kind of benefits or expected outcomes one would expect from integration efforts... rationales are reflected in the policies and programs that are developed and eventually implemented (Knight, 2004).

Objectives of the Study

The comprehensive nature of this trend is in need for deeper scientific understanding of the essence of integration and its role in the development of nature, man, and society (Baeva, 2005; Onokoy, 2004; Troshina, 2005). In our opinion, it is an uncertain understanding of the causes, nature and mechanisms of realization of "the idea of integration" as the essence of the idea leads to indefinite understanding of the idea of education, which according to the Federal Law № 12-FZ 2009 understood as a purposeful process of education and training in the interests of people, society and the state (Decree of the President of the Russian Federation № 599, 2012).

The purpose is the managed reproduction of country's scientific - pedagogical capacity, the advancing forming and development of the new perspective scientific directions of researches (first of all, on the "joints" existing).

Main objectives are:

1. The strategic development in education and science, economy and the social relations in the national and world scales conducting the improvement of quality of peoples' life, and effective scientific and technical ensuring implementation process of these development.
2. The priority of training and teaching structure within the created single scientific and educational space and mechanisms of their implementation.
3. The integration as the central idea of development, leading to the increment of the quality of education through quality of human, society, and state.
4. Increase of scientific activity of scientists, efficiency of postgraduate studies and doctoral studies; search, selection and purposeful pre-university and postgraduate preparation of talented youth for the subsequent work in leaders of scientific (scientific and educational) structures.
5. Forming of implementation mechanisms in higher education institutions of obligatory mutually maintenance of teaching and research activities (as on the basis of traditional involvement of teachers of higher education institutions to scientific work within the planned and initiative scientific researches conducted by higher education institution, and on the basis of the encouraged combining jobs of work of the teacher in higher education institution and profile scientific research institute, and also encouragement of periodic transitions of teachers and scientists from higher education institution in profile scientific research institute and back).
6. Increase of equipments' efficiency in use (often expensive and unique) and infrastructures of higher education institutions and scientific organizations on the basis of their joint use for carrying out scientific researches with involvement of teachers, graduate students, and the prepared students.
7. Possibility of additional resources for stimulation of teachers and research associates, their professional and common development, updating of educational material resources, forming of new educational and scientific programs (including through education export).

The Hypothesis of the Study

Any development of the system, is accompanied by a change in its structure, is the result of the interaction (mutual action) of its members among themselves and (the system) with the outside world with the formation of new connections and, if necessary, and new “elements” (all developing system - open system) that leads to the emergence of new properties in the system (with the possible loss of the existing connections and system properties) and new, hierarchically higher, the principles and laws of their display and interaction of their carriers. Therefore, we have two definitions of “integration”: First, education, and training; Second, the interests of three parties - the individual, society, and state.

1. What does this integration of elements mean for each other?

2. Is it necessary to combine education and training to meet the interests (and what are these interests?)
3. Through what mechanisms could it be realized?

Still there are no convincing answers.

Literature Review

These reviews literature produced on the policy issues of higher education integration on the whole and particularly in Russia. Literature review includes different kind of sources as official statistics, reports, scholarly journals, reviewed articles, reference books, research institutions reports on higher education integration, national and international universities libraries, computerized databases, the WWW.

Material was identified mainly by reference searching and electronic literature searching using as search terms higher education, rationales for higher education integration, etc.

Accumulation and generalization of the experience of integration in higher education had always been distinguished by a high scientific and fundamental, active participation in international processes, including the field of scientific comparative studies.

A great contribution to the study of foreign education systems was made by such leading Russian scientists as Brazhnik (2004), Wolfson (2002), Dzhurinskiy (1993, 2004), Ivanov (2002, 2006), Kovalenko (1997), Malkova (1983, 1998, 1999), Nikandrov (1978, 1995), and others.

Development of problems connected with the use of the positive experience of foreign professional education systems is conducted by scientists of the Institute of Pedagogy and Psychology of Professional Education of the Russian Academy of Education (Tregoubova, 2011; Masalimova, 2006; Sagitova, 2010, etc.).

Materials and Methods

During the study the following methods were used:

- Theoretical methods: system analysis, synthesis, generalization, theoretical analysis of philosophical, pedagogical, psychological, scientific, methodical and technical literature on the research problem;
- Empirical methods: observation, and experiment.

The Experimental base of the Study

Experimental work was carried out on the basis of University educational district of the Republic of Tatarstan in Russia, including 50 entities (Kazan National Research Technological University, Kazan State Power Engineering University, state and non-state universities of Tatarstan, the municipal educational institutions and others).

Theoretical Framework of the Study

Integration as an association indicates the main trend of education development, the essence of which - to change with the increasing complexity. Since all the difficulties in implying the existence of the structure (as a combination of elements and the relationships between them), the idea of development inseparable with

the notion of system (which is understood as an integral structure) and its complication (Ashikhmina, 2010; Gretchenko, 2009). Thus, all systems - open.

Existing in the world natural systems and being such system, man is capable to create the systems artificial, whose functioning must be subordinated to principles and laws of peace of natural. Creation and development of artificial systems in the world, has a prototype of the world's natural systems, carried out by means of integration (due to the formation of the necessary links) separate elements into a coherent whole in order to obtain the desired properties (Baidenko, 2002). These desired properties are expressed by the purpose of the creation (functioning) of system. Purpose is the basic system-forming vector, the setting device of synergy (combined action) of the elements, the source of their mutual interconnection. Any new system always has new properties. In this case, in the world of artificial systems can be a targeted control of the degree of their integration (integrity) and, as a consequence, the efficiency of manifestation of properties.

The processes of the natural interaction of the elements of the physical world are subject to the following basic principles of the natural: the least action (which is a particular expression of the principle of conservation - the principle of inertia), the threshold (discontinuity) of development (the system switches from one structure to another) and limited (range) of existence (in the space and time) – by virtue of the discreteness, the quantization of the world (Mokhnachev & Mokhnacheva, 2010; Mokhnachev, 2009). An additional principle in the world of living systems is based on the ideas of the dynamic perception and reflection, foresight principle.

The problem of the controllability of large systems is solved by the introduction of the hierarchical levels of control, for each of which complements the management (corrects, directs) the following to the natural laws of the systems' organization in this form "self-guidance", which realizes the principles of interaction. The main condition for effective management is the availability of complete and accurate information about the management of facility and the possibilities of the subject of management.

In the world it is impossible to receive additional (synergetic) function of the whole action without equivalent loss of private functions of actions of elements. "Payment" for synergetic super additive (the realized purpose), for increasing the integrity of system is (partial) loss by elements of "independence" which is shown in restriction of the actions allowed them. In a limit case when integrity of system is close to unit, its elements completely lose "freedom," becoming "small screws" and "castors" of system with only systems' interest, with the only common goal to achieve all their actions.

Further development of such system within this common goal is impossible (in fact, such system turned into an element). Development becomes possible only in case of introduction from the outside of the new, changing communication between old elements (that conducts to expedient reduction of integrity of system) and giving the chance of new elements formation, power information as new purpose (information) and construction material (energy substance).

Owing to limitation of accuracy in reality perception absolutely effective management and reliable forecasting for long term of systems' behavior are essentially impossible. Therefore, movement to the same purpose (even in the

same conditions) is performed on many effective ways forming a tube of effective trajectories. Proceeding from it, the set of effective ways for developing the integration processes in education and forms of their implementation is possible. The main problem of the managed integration in social systems (a family, a community, the state, mankind) is the problem of a ratio of interests of part and whole, persons, and societies. Following logic of rebirth system, solutions of this problem it is impossible without identification external (in relation to considered society as to system and its elements – certain people).

As this purpose in the scientific plan shall follow from natural laws of the nature functioning (society), it should be revealed and precisely formulated. Then, relying on this revealed global purpose, the person and society (state) will be capable to achieve independently and correctly determined essence of true interests of the personality and society (state) and the current optimality of their ratio among themselves. Unfortunately, as the purpose the scientific knowledge can't offer anything, but the development in general. In addition, this purpose in relation to the person and society (in case of its correct understanding) could be enough to exclude people and to determine it implementing optimum ratios of interests of the personality and society within these or those social systems.

The main idea of education – idea of development (as a natural sign and essence of life: life is development) the personality, and through it and societies. The main objective of education is forming the capable structure to self-development and the personality aiming development. The loss the idea of development in the education as a self-value is the basis of many researchers marked by crisis of modern education, leading to emergency and crisis situations in the world.

The reason is in the wrong chosen vector of development. Development as an extension of the material possession should be replaced to the spiritual communion development. From the idea of the education integrity and its individual social mission should follow the idea of unity of education as a "good-service". At the same time there is a minimum, ensures the further society development, the elemental level of education as a public goods. At present, such a level in Russia can be considered as the level of secondary education.

Education Management should be mandatory. No self-organization is fundamentally unacceptable. The goal of education management is to improve the quality of education, lead through a human quality to the quality of life. For assessing the quality of education, the quality of the integration processes in education should be linked to the quality of student assessments increment as a product of a specific process of the educational process.

So, considering the possible directions and manifestation of the integration processes in education should be based on the optimal combination of them in the individual goals of society and the state, obligatory over-the appearance, socially and economically sound properties, the possibility of restructuring the operational structures of systems formed by changing the backbone purposes of evaluation quality of these processes through the evaluation of the increment of human quality, the need to consider national traditions and global trends related to the advent of the information society.

Principles for the implementation of the integration process into higher education

Based on the leading ideas of development to improve the human quality and quality of life, general principles for the implementation of the integration processes in education, involving controlled self-organization of integral structures in the interests of human, society and state are necessary to be formulated.

1. *Principle involved diversification of elements and shapes of their interaction in space and time (integration "in the broad sense").* It reflects one of the basic ideas of natural evolution of living systems - the idea of polymorphism as a condition for finding the optimal (minimizing resource costs) and their further development in social structures. The most natural way to create new structures in the field of education, in accordance with the principle of "allowed everything that is not forbidden" (laws, public, private moral and ethical "taboo"). The implementation of this principle - the way to the implementation of adopted by the international community in Rio de Janeiro in 1992. "Concept of Sustainable Development" likes managing socio-natural evolution, which is based on the idea of human perfection.
2. *The principle of integrity (systemacity) of the created structures.* Reflects a main objective of integration - receipt of properties what for modern education it is reasonable to consider the objects of modernization of education set by the Ministry of Education and Science of the Russian Federation connected with increase of its quality, availability, a continuity, investment appeal in interests of the personality, society, state (according to a vector of spiritual development). Thus the leading direction of modern integration processes in education is connected with integration of science and education as a condition of reproduction and development of the human and technical potentials during an era of the scientific and technical revolution, which is characterized by continuous reducing time from emergence of a discovery before its mass implementation.

Science Education (i.e. education and research), regional (and interregional) the organizations shall become the "engines" of development, determining the current image of society and prospect of labor market development. Specialized research and production, educational and manufacturing, as well as unified an educational and scientific-industrial structure, which is expedient to form industry regions ("profile") across the country.

As all developing systems are open, their efficiency in many respects depends on compliance of the created forms to environment. Moreover, complete creation (and therefore effective) of the educational environment identified with an education system in a broad sense - a main goal of integration processes in education. Hardly reasonably be guided only by progress of the western countries because in each country the approaches which are relying on the national features, opportunities and the developed traditions and therefore effective for the conditions are used.

Nevertheless, in case of all national distinctions it is possible to speak about existence of general tendencies of ensuring integrity of the national education systems connected with consolidation of efforts of the state and society in achievement of strategic tasks through idea of integration of education, science and industry, idea of life-long education, idea of increase in weight of the state in educational policy today (including by means of increase in budget financing of education).

3. *The principle of the minimum sufficiency (minimalist) of level of the current integration (in space and time).* Reflects idea of minimization of costs of resources (on forming of necessary communications) for achievement of desirable result, being shown through the principle of the smallest action. As management of systems is, first of all, management of communications of elements of system among themselves, the least economically costly method of receipt of the properties of the integrated scientific and educational systems desired properties is connected with optimization of communications between already existing elements and minimization of their power-material filling. Thus the minimalistic idea of extends and for the period of existence of the created systems (time of existence of structure shan't exceed time of need for its functions therefore the part of inefficient state structures can simply stop the existence). Therefore local integration network within separate perspective projects in case of participation financing of the project and use of its results shall gain the greatest distribution.

Need of resources concentrations of the state and society on the main directions are connected in modern conditions with follows from the same principle:

- The priority for federal research (research) universities, federal scientific and educational centers and leading higher education institutions;
- The fundamentalization of scientific researches of the higher school;
- The support of an innovative orientation of scientific researches and perspective large scientific projects, forming of innovative appeal of education;
- The improved quality of scientific and educational personnel training and retraining;
- The educational services export development;
- The improvement of quality of free school education determining success of all above-mentioned directions.

Besides, feasibility of minimization (in necessary cases) structures of system follows from the principle of the minimalist. In the modern world it is connected with transition of mankind from material-intensive to the knowledge-intensive production. However once again we will pay attention that reasonable minimization of the organizations connected with transformation and production of information doesn't mean inexpediency of enlargement of the structures connected with traditional transformation of substance in all its manifestations at all (large-scale industrial production, animal husbandry, construction, etc.).

In relation to education it means possibility of coexistence as small (on the occupied spaces) the scientific and educational structures training specialists in the field of consumption and the transformation of information and traditional power and the scientific and educational structures with the considerable scientific and experimental equipment and pilot production.

4. *The principle of a reasonable pragmatism* (from Greek «pragma» – trade, business). Supplements the principle of minimalism, warning against complete commercialization of education, complete transformation of education into service. It is unlikely but necessary to consider as the imitation sample the existing tendency of transformation of universities

into economic corporations, in market places on production of the useful knowledge bringing an immediate economic benefit. There shan't be an education only entrepreneurship which success is determined by its competitiveness and profitability. Even in the conditions of forced and reasonable restriction of budget financing there shall be state and public priorities which financial maintenance the state shan't assign to self-organization of the market. Nevertheless, it is necessary to consider more and more developing integration of education and business.

5. *Principle of timeliness.* Supplements the principle of minimalism. It is allocated as the separate principle in connection with its special importance in modern high dynamic the world. Any integration "is good" (requires the minimum costs in case of the maximum return) in the time. The optimum moments for receipt of the greatest efficiency – the moments of passing by system of points of bifurcation when by small efforts it is possible to provide the desirable direction of further development by creation of necessary communications. It concerns both certain people, and the countries, which regularly pass such points. If not to take now necessary measures for integration of education, science, production according to ideas of "The concept of a sustainable development" (taking into account national interests), in Russia it is possible to receive the extremely undesirable final attractor.
6. *Principle of hierarchical and network management.* Allows overcoming "a dimension damnation" of big systems, optimum to combine in management of idea of centralization and decentralization. At this conjuncture conducts to feasibility of consideration as basic elements of single scientific, educational, social and economic space of the country of the certain regions which are complete systems at the level. Allocation of the regional integrated structures as the major growth points, crystallization points, sources of the correct bifurcations in national scientific and educational space allows to solve effectively regional problems. A problem is in development of effective mechanisms of optimum connection in idea of regional integrity of interests of regions and the countries. Thus it is necessary to consider the country as systems a peculiar payment are some restrictions of actions of elements (regions).
7. *The principle of informatization of the created structures.* The least costly and most effective communications today – communications information. The access to operational communication, the new scientific ideas best for books offered by modern information and telecommunication technologies opens unknown opportunities for science and education. Thanks to these technologies there is a gradual globalization of information component of the educational environment. Therefore important ideas of development the open education and remote educational technologies are represented correctly implementable (with preserving a reasonable national component and use of adequate pedagogical technologies). The computerization allows integrating traditional technology of training (chalk board, the book, the abstract, oral examination) with electronic technology (availability of world information resources, possibility of creation and automatic replenishment of the specialized E-libraries, the electronic multimedia textbook, laboratory

computer practical works, the computer training and testing programs), which is improvement of education quality.

8. *Principle of a quality*. Without the feedback based on quantitative measurements (estimates) of a condition of the developed system it is impossible to reach desirable efficiency of the managed integration. It is obvious that these estimates shall be connected with the individual and public predestination of education conducting to improvement of quality of the person and quality of his life. Therefore the beginning of a quality way - in forming of the interconnected metrological spaces of quality of the person and qualities of life (quality of habitat). For operational estimation of quality of integration processes in education at the present stage of scientific knowledge it is possible to use private and integrated indicators of the mentioned "Concept of a sustainable development".

Results

Integration of education, science, and entrepreneurship is the sharing of capacity of the educational, scientific and entrepreneurship organizations in mutual interests (Shlenov, 2009). First of all, in areas of preparation, professional development and retraining of personnel, and also carrying out joint scientific researches, introductions of scientific development, etc. These integration processes cover a wide range of various activities and are shown in the most various forms.

Rapid development of means of communication gives the unique situation in society. It has the direct impact in all spheres of economic and spiritual activity of the person, turned into international means of interaction and interference of the states, branches, firms, and even certain experts. There was a high level of interaction between science, education, and entrepreneurship as data carriers here the same persons the experts using the uniform information environment often act (Shlenov, 2009). Integration processes between the considered kinds of activity, first, are economic and effective, secondly, accelerate scientific and technical progress, thirdly, and allow using rationally intellectual potential of science and the higher school not only the certain country, but also the world community in general. Generalization, the analysis, and use of this experience can bring huge benefits to all participants of this process.

Integration of training, science, and entrepreneurship provides their organic compound in training of the student on the chosen specialty in higher education institution. The effect from such connection significantly depends on a form of its realization, and the open space of education is under construction in the form of system of the conventional and informal attitudes providing trained (irrespective of its national or state identity) uniform opportunities for professional growth and follow-up activity according to the received preparation (Fedorov, 2009).

Discussions

Forms of the integration process in the higher education

According to the available practical local and foreign experience in the forms of integration in science and education, which can supplement each other and partially combine, reasonably carry:

- On bases of the leading higher education institutions and academic institutes create the federal research universities;
- Creation at Russian Academies of Sciences institutes of the large scientific and educational centers (for the purpose of training for fundamental science), and also specialized on the leading higher education institutions;
- On bases of the regional Russian Academies of Sciences opening scientific centers of branches of leading universities of the country;
- On joint bases of Russian Academies of Sciences as the leading higher education institution propose to open structural merger of faculties in higher education institutions and scientific research institute (with a single academic council and a management system) on uniform activities of the scientific and educational and educational and scientific (educational and scientific) centers (complexes);
- Creation of university complexes (consortium);
- In the leading higher education institutions opening the new faculties, and also basic laboratories of the leading research organizations and Russian Academies of Sciences institutes;
- Within the educational and methodical associations of higher education creating the scientific and educational commissions of experts from representatives of education, the academic science, as well as creating based on regional interdepartmental coordination councils in the perspective scientific directions, creation joint venture, which is based on higher education and scientific research specialized on academic degrees and entrepreneurship;
- Creating youth centers in various directions as first link of system of purposeful forming of future personnel elite of science and education;
- Forming various (industry, profile, regional, interregional) national and international unions and associations;
- Creating the scientific and computer centers, providing the experienced and experimental equipment;
- Creating within single scientific, educational, social, economic space for the national system of innovative management providing the favorable innovative climate (by means of provision of tax and customs privileges, entering of new specialties, creation in case of scientific and educational structures of the centers of advanced technologies, science and technology parks, scientific and technical and innovative firms, consulting firms, venture funds, the centers of a transfer of technologies, funds of pre-sale operational development of intellectual production, innovative incubators);
- Creating branches and representations of the Russian higher education institutions abroad with foreign partners.

Tasks of the integration process in the higher education

These tasks can be listed as follows:

- Search and approbation of ways of quality improvement of education on the basis of wide involvement of the public and professional organizations for public professional certification and accreditation of educational institutions (educational programs), determination of the nomenclature of the directions

and specialties of training, development of qualification requirements to the level of training of specialists and professional standards, implementation of monitoring and forecasting of needs for personnel (through independent public and professional structures);

- The scientific and practical orientation of educational process strengthening on the basis of higher education integration and creating the basic chairs and special faculties;
- Specialists training and scientific works accomplishment on the contractual basis for the specific entities, in particular within scientific and educational holdings;
- Coordination forming and the boards of trustees of higher education institutions from representatives of the public and employers;
- Spiritual component strengthening in education of younger generation as the most important component by means of integration science and religion: substantial part of textbooks (for example, on such disciplines as Cultural Science or Concepts of Modern Natural Sciences), attraction to carrying out occupations of representatives of religions, entering of special facultative or obligatory rates in higher education institutions;
- The civic and military education integration providing economically and socially effective solution for specialists training and retaining, increasing the education integrity (the agreements of civil and military higher education institutions among themselves, with scientific and public organizations, the government and other institutions under control of the state and society of network scientific and educational associations. Such integration provides joint educational material resources, the faculty and mechanical personnel, infrastructure of the organizations in interests of training of both civil, and military specialists, proceeding from a task of ensuring national security and requirements of the regional labor markets);
- Increasing conditions for public institutes in the higher education management (for example, through trustee or public councils). It will allow to provide big transparency of financial and economic activities of scientific educational institutions and governing bodies, to reduce investment risks, to keep a vector of public concerns in the conditions of market economy and, in general, to promote to transition from idea of "management of higher education institution" to idea of "education quality management";
- Forming the independent system for education quality assessment (through the centers for complex quality education certification);
- Creation of the conditions for ensuring mobility, which are trained within national (and international) scientific and educational spaces (associations of higher education institutions of Russia, associations of the Russian and foreign higher education institutions created on the basis of the principles of industry accessory and cross-industry proximity). Implementation of mobility will be promoted by use of the reflecting idea modular structure of educational programs, and also single systems of test units;
- Creation of conditions for increase of economic independence of educational institutions, stimulations of an investment in formation of private and corporate assets on the basis of a variety of their admissible forms of business (for example, by creation of corporate universities);

- Creation of conditions for mass implementation of a multi-level education system, reasonable for more active participation in export of educational services (when preserving possibility of five years' training on engineering and natural-science specialties).

Conclusion

The main problems concerning the integration in education and science and the ways it can be solved are determined to be as follows:

1. The problem of sufficiency starting and supporting public financing in the sphere of the higher education and science as the most important condition of effective integration is the condition of formation of investment appeal of the sphere of the higher education and science for the private capital, a condition of improvement of quality and availability of the higher education.
2. The problem of overcoming the historically developed administrative legal barriers, traditional office of the higher education, branch scientific research institutes and the academic science, various sources of financing and forms of ownership of the integrated structures.
3. The problem of insufficient completeness of the existing legislation concerning objects of intellectual property, and also its discrepancy and an excess prohibitive orientation. It is necessary to recognize that if society "ripened" for democracy, the civilized market, "self-government," it became rather law-abiding; on many questions it is necessary to eliminate the superfluous and disturbing guardianship of the state.
4. Problem of «brain drain» and related problem of aging within scientific and teaching structure. It can be solved only in increasing in financial streams in science and education and, as a result, the essential the material work incentives of scientists and teachers. The rearrangement of this problem completely has no right to heads of the scientific organizations and educational institutions. "Shock therapy" in the fields of education and sciences is inadmissible because it will lead to irreversible avalanche degradation of the nation. There is no other exit, except essential increase in public financing at least of the priority directions.
5. Problem of excess conservatism in the higher education and sciences. On the one hand, as reflection of the general principle of preservation, it is quite good because allows to exclude inadmissible dashing aside to please to fashionable ideas – "panaceas." However the negative bias that is quite often shown in science and education to all new conducts to braking of development of society. In many respects this problem - display in science and education of an eternal problem "fathers and children." Its decision – in timely and wise management of society and the state is superfluous critical situations.
6. The problem of deterioration of the higher and postgraduate education as a result of deterioration in level of training of teachers and graduates of schools, transformation of education for trained in a campaign behind the diploma (the expert, the master, the candidate or the doctor of science), and for the training – in means legal (through a set of "hours") or illegal (through bribes for revenues and delivery of offsets or examinations to sessions) earnings money. The solution of this problem is impossible without restoration in the course of integration of a vector of development in education as the leading vector connected with spiritual improvement of the person: as trained, and (that is

much more important) training. Statement and realization of this task in scales of one country in the interconnected world founded, in many respects, on “force truth” and “force of money” taking into account that the country economically is not strongly developed, and the most part of its population is brought up on ideas of a collectivism without recognition of primary value of the personality – is difficult to achieve.

7. A problem of preparation of administrative shots for the integrated scientific and educational structures. It is not only about development in managers of properties of the manager (though it is important). It is about creation of effective system of continuous preparation of a key element of the highest level.

The possible difficulty is the current state of science, which is defined by the avalanche growth of the current knowledge and technical capabilities of the person in the absence of necessary integration of this knowledge from some common positions allowing understanding sources of the nature, the person, societies. It is clear that it is necessary as much as possible to try to keep fundamental nature of education, to try to form widely educated personality (early narrow specialization without sufficient general education – a way to society of "small screws and castors").

However, what it is necessary to teach in higher education institutions today to manage to connect in a limited framework of an educational program fundamental nature of education to its practical orientation? It is obvious that the reasonable system of purposeful efforts on development and deployment of mechanisms of integrative development of subject matters and educational programs promoting transition from a priority of amount of knowledge to quality of thinking and, as a result, the advancing formation of perspective specialties is necessary.

Disclosure statement

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Notes on contributors

Aida R. Nurutdinova is PhD, Associate Professor of Kazan National Research Technological University, Kazan, Russia.

Elena V. Dmitrieva is PhD, Associate Professor of Kazan State Power Engineering University, Kazan, Russia.

Lilya R. Gazizulina is PhD, Senior Lecturer of Kazan National Research Technological University, Kazan, Russia.

Natalya M. Tarasova is Senior Lecturer of Kazan National Research Technological University, Kazan, Russia.

Elvira I. Galiullina is Senior Lecturer of Kazan National Research Technological University, Kazan, Russia.

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