

## UNIVERSITY INTELLECTUAL CAPITAL FORMATION AND DEVELOPMENT

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### Abstract

**Purpose of the study:** One of the most important terms to solve the problems of the education system is the educational institution's intellectual capital, which significantly transforms the role and functions of the modern educator. The purpose of the article is to identify the essence of the University's intellectual capital and to justify the trajectory of its development, due to the needs and capabilities of education stakeholders.

**Methodology:** Based on the methodology of education quality management the article justifies the leading role of quality education as an imperative of the University development. Intellectual capital is considered from the standpoint of organizational resources that determine the cost of the final product – the quality of education and the competitive position of the University; its development is carried out based on the project-target approach.

**Results:** Modern requirements for the intellectual capital of the educational organization are revealed, the role and essence of pedagogical activity of teachers of higher education institutions in its formation are shown. The importance of continuous improvement of hard and soft competencies of University teachers as a way of incrementing intellectual capital is shown. The adaptive model's design of University teachers' career strategies based on design-target mechanisms is presented that determines the organizational development of the University.

**Applications of this study:** The results determined the possibility to consider organizational and human knowledge and competence as a special type of investment to improve the functioning of the University. The recommendations for the construction of models of the University intellectual capital management are presented. The article is intended for employees of the education system, educators, researchers, and heads of the University departments.

**Novelty/Originality of this study:** The contribution is made to the theory of the University's social and cognitive management based on expanding the powers of quality management in the field of intellectual capital management.

**Keywords:** *intellectual capital, university, career strategies, adaptive modal.*

### INTRODUCTION

Education is a mechanism for new knowledge, skills, professional and social experience transfer, and assimilation, and is aimed at socio-cultural preservation and development. A special role in this process belongs to educational institutions, which are the bearers of social values and the linking units between the past of society and its promising future. The most valuable resource of an educational institution, as a producer of educational services and *products* of scientific activity, is its intellectual capital, participating in all types of the University *production*– educational services and scientific *products*. Intellectual capital at the mass level is realized in a harmonious multi-faceted personality of a University graduate, who is not so much a recipient of external imperatives as an entity of the social process. In this regard, the development of new methods and mechanisms of intellectual capital management aimed at its formation, accumulation, and use is becoming increasingly urgent ([Ritchie, B. K. \(2002\)](#)).

Intellectual capital requires special management based on social and cognitive relations in order to ensure sustainable innovative development and competitiveness of the University in the market of educational services; improve manageability and provide additional funding for activities.

The diversity of scientific ideas about the structure of the intellectual capital of the University and organizations in general ([Yarushkina and Kobelev, 2018](#)) confirms its two main components – the human resources and intellectual property, expressed in the results of research and educational activities. At the same time, their interrelation and synergetic effect are obvious – the improvement of each of the directions significantly affects the result of the University – the quality of education. It is this aspect that makes it possible to consider the University human resources (teachers and educators) as a special type of investment, improving the quality, improving the functioning of the labor force, the total cost for the development of the country's reproductive potential.

In a cognitive society, when the institution's knowledge becomes its most significant advantage to achieve strategic goals, the study of the developmental opportunities of the University's intellectual capital becomes a necessary task.

## RESEARCH METHODOLOGY

Intellectual capital of the University in the context of quality management

Significant changes affecting the educational system, led to a change of priorities (economic, regulatory, ideological, methodological, etc.), but did not change the two main positions of the education system: 1) focus on the quality of education as its key parameter, which shows the socio-economic importance of education in the country; 2) the role of teachers as a determining factor in the education process ([Tskhadaya, Bezkodov, and Belyaeva, 2018](#)).

The obvious interdependence of these positions is based on the idea of the student's education quality through a set of *qualities* of the educational process components, the main share of which is the *quality* of teaching staff and their *educational products* - the quality of teaching activities, the quality of educational programs, the quality of transmitted knowledge, educational technologies, etc.

The dynamics of educational policy and the dynamics of professional tasks require the teacher's readiness to implement and solve them, while the personal need of the teacher in self-realization and professional growth is important. The higher will be the *quality of pedagogical potential* (opportunities, abilities, resources) – the more effectively will be realized the goals and objectives of professional-pedagogical activity (formation and development of the student's personality in the process of education). *Quality of teaching activity* is provided by the teacher with the corresponding level of scientific character of professional and intellectual knowledge, psychological, pedagogical, and methodical preparation. Effective teaching activity involves the ability of the teacher to build psychological and pedagogical interaction with students and colleagues; participation in research/ experimental projects, the desire and aspiration of the teacher to innovate, which in General determines the pedagogical skills. Increasing the level of professionalism, strengthening his/her competence, the teacher builds a clear algorithm for the formation of students' competencies ([Davoudi et al, 2018](#)).

*Quality of the educational (learning) program* assumes, first, its potential quality which is put at design, development of the program (the purpose, the contents, pedagogical technologies, etc.), and, secondly, it is real quality of the program which depends directly on the teacher during its implementation; as far as the teacher opens potential opportunities of the educational program. It is the very *quality of transmitted knowledge* important, which depends on the ability of the teacher to design the subject content of education and transfer it to students without cognitive distortion. Moreover, the combination of traditions and innovations, the choice of educational technologies that are adequate to the goals and objectives of the educational process, is the *quality of the implemented educational technologies*. *The quality of training and methodical provision* involves constant updating of teaching and methodical complex of disciplines, the development of new technologies not only classroom lessons, but also lessons in the framework of independent work of students, aimed at developing the necessary competencies.

Thus, constantly developing intellectual capital is a system that combines the personal resources of the teaching staff, including knowledge, attitudes, and relationships, forming forms of experience's translation, and aimed at providing training, education, and development of the student's personality.

*Features of management of the University intellectual capital*

The accentuation of intellectual capital is caused by the fact that:

1. In modern conditions, it determines all trends and the result of the University development;
2. Its formation requires from each stakeholder the formation of increasing costs;
3. It builds up, becomes obsolete and needs to be updated;
4. Its essence is determined not only by the obvious signs but also by the environment and socio-cultural characteristics;
5. It is not separated from the carrier (person) and its growth should bring the owner a long-term socio-economic effect;
6. The products of intellectual capital are fundamentally different – competencies are continuously incremented and transformed, as the intellectual product can be ones developed and may be obsolete;
7. It is in the field of interests of the producer, is its *decision* regardless of the types of investment and is expressed through the degree of its impact, social responsibility and abilities.

The presented specificity of the University's intellectual capital confirms the leading role of teachers in its formation and necessitates: a) continuous improvement of their skills; b) the creation of conditions for the development of intellectual capital; c) improving the management of intellectual capital.

In this paradigm, an important element of collective goal setting is the system of improving the quality and forms of teachers' training with relevant professional competencies and innovative technologies for the reproduction of knowledge and intellectual property.

From the standpoint of professional ontogenesis *attitude* to the development of intellectual capital of the University pedagogical staff should lie in the field of interests of the teacher, his/her professional consciousness, values and motivation, mobilizing the teacher to continuously improve their competence, expand its functionality and increase responsibility for the results of pedagogical activity. The competency-based paradigm, which closely connects the functions of the teacher, his /her knowledge and skills, emphasizes the ability and readiness of the teacher to perform professional duties. The focus on dynamic updating of knowledge and competences both in subject, and pedagogical spheres, formation of other way of thinking and actions of the teacher in the conditions of continuous education and economy of knowledge, obviously, demands new approaches both to system of professional development, and to self-education of the teacher possessing, certainly, higher speed of updating.

## RESULTS

It is necessary to identify several possible gaps in the professional training of teachers, hindering the development of the intellectual capital of the University.

Pedagogical labor activity begins from the moment of the teachers' work in the educational organization when they *expose* the competences they received during their own professional training (professional, General professional, General cultural) into the labor market. An extremely important aspect should be noted – teachers of professional and higher education may not have pedagogical education (or have it in a minimum amount), being graduates of specialized universities. The value of their subject-professional knowledge is quite high, as they possess the fundamental scientific foundations of the subject or have universal skills in the industrial field, which makes them necessary specialists for educational organizations. Moreover, here we find the *first gap: the lack of pedagogical readiness*.

On the other hand, there may be a *mirror* situation when a graduate of a pedagogical specialty who fully owns the necessary pedagogical knowledge does not have such deep subject, scientific and practice-oriented knowledge as a graduate of a technical University or a classical University, and then a possible *second gap* is determined: *the lack of subject readiness*.

No less important are the *difficulties of a personal nature (the third gap)*, which are found in the first and the second category of teachers in a collision with the pedagogical reality, arising from underdeveloped emotional and volitional stability, self-regulation of behavior, adaptive potential and significantly violating the normal course of the educational process.

The identified gaps demonstrate the need to *align* positions and fill the gaps by acquiring new knowledge, skills, competencies and positive teaching experience in order to achieve productive teaching activities and the development of intellectual capital.

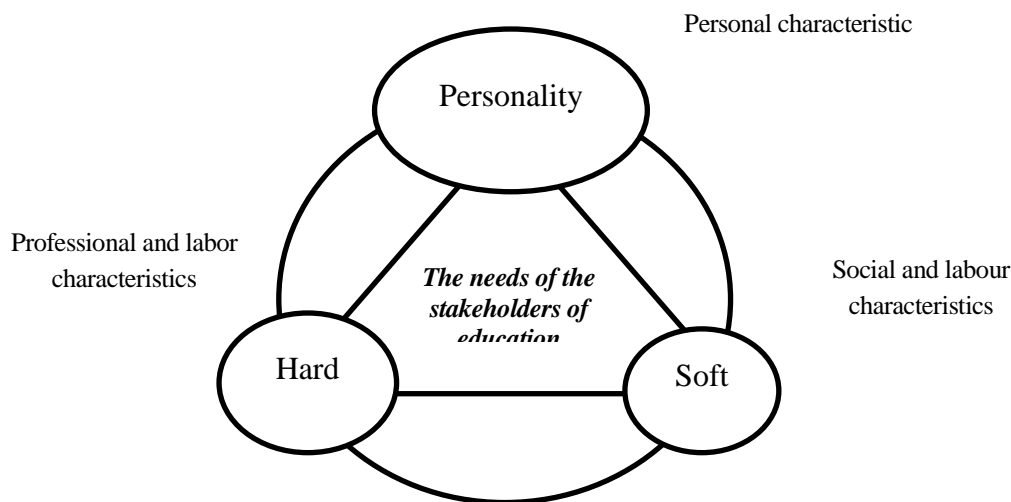
The use of teacher competencies is realized through the performance of labor functions, which are set within the framework of the professional standard by the teacher. By establishing a link between the teachers' professionalism, their duties and the system of payment, this standard also establishes the scope and direction of professional development of the teacher to perform the necessary professional tasks, focusing on the coordinated growth of teachers' freedom and responsibility for the result of their activities and the growth of the institution's knowledge.

The gap between the competencies *at the entrance* to the profession (or a new step in career strategy) and the necessary competencies to perform the established job functions is leveled by practical pedagogical experience, professional training (advanced training) and self-education, this gap is filled by the existing knowledge of the institution about the development – established models and technologies of additional training of teachers.

The developed in the course of professional-pedagogical activity **hard - and soft -competence** that supports its integrity and determines the feasibility and effectiveness of pedagogical tactics and strategies are designed to contribute to the solution of these issues in the conditions of high dynamics of modern education. In this context, these competencies act as the potential of quality, determining the system of knowledge, ability, and readiness for teaching, forming the intellectual capital of the University. (See figure 1).

**Hard-competence** (*hard competence*) – professional and labor characteristics of the set of knowledge, skills, and methods of the teachers' activity to solve the problems of training, education and development of students, including *epistemological, information and cognitive, methodical, research, psycho-didactic and professional activity -based components*.

**Soft-competence** (*"flexible" competence*) – social and labor characteristics of the set of knowledge, skills and personal characteristics of the teacher in the field of interaction between the participants of relations in the field of education and participants of educational relations (agents of education), including: *professional and personal attitudes (responsibility, self-organization, self-government); social skills (communication nature, tolerance, cross-functionality); management abilities (leadership, time management, critical thinking)*.



**Figure 1:** Triangle of the teacher professional development

Conditional gradation of labor characteristics on hard - and soft is due to their orientation (professional and social) and, at the same time, a high correlation for the successful solution of professional tasks. *The hard* competence of the teacher involves professional knowledge, skills, which, in turn, are divided into subject-based and pedagogical ones. They are based on the professional, General professional and General cultural competences obtained in educational and professional activities, developed in the course of pedagogical experience, additional professional (pedagogical and subject-based) training, self-education. These competencies are sustainable substitute, using the original skills in the subject-based and pedagogical activities (e.g., *know the ways of nonlinear equations' solution and mastering the methods to teach the methods of solving nonlinear equations*). They are quite well identifiable, measurable and included in the list of labor functions of the teacher. Experience of pedagogical activity promotes, in some sense, formation of *automatic* skill of performance of the set professional tasks on accurately set algorithm of actions. At the same time, *hard* competencies conditionally determine the area of intellectual capital of each teacher.

*Soft* competencies represent a projection of the personal (social and administrative) features of educational activity (*cross-professional* competence), causing the productivity of the professional qualities of the teacher, the method of *occurrence* and the existence in the profession, professional style, regardless of subject orientation. They are based on the General cultural competence and personal characteristics obtained in educational and professional activities, developed in the course of personal pedagogical experience, special (personality-oriented) additional training, and self-development.

*Soft* competencies are quite universal, not tied to a particular profession and are difficult to assess, providing, meanwhile, a decisive influence on the result of professional activity (experts indicate from 75 - 85% of the contribution of soft skills to the result). In the activity of the teacher, solving, among others, and the tasks of pedagogical management, these competencies are very important, since we are talking about the entity-subject interaction, on the one hand, the governing and determining role of the teacher, on the other hand, that is, the continuous preservation of the role, functions and balance in pedagogical interaction in the implementation of labor functions. It is also important that the formed soft-competencies, in turn, generate cognitive activity, which contributes to the development of hard-competencies, responding to the tasks of continuous increment of intellectual capital.

Thus, the structural content of hard - and soft-competencies of the teacher in training allows determining their binary relationship: *qualification – values; skills – behavior; profession – life activity in General; formed technologically in compliance with the basic requirements – formed variative, the result is not guaranteed; not subject to reverse development – variation in specific conditions.*

The cyclical relationship between "hard" and "soft" competencies is manifested in the fact that it is equally insufficient for a teacher to possess specific professional subject and pedagogical knowledge, skills, and abilities. They should be mandatory, but for the successful solution of a variety of multivariate organizational and pedagogical tasks and the creation of an intellectual product, adaptive personal qualities are necessary, which determine its ability to develop and increase intellectual capital. That is, the development of *hard* and *soft* competencies occurs continuously in the course of pedagogical activity of the teacher, forming multidimensional matrices in the form of templates of organizational knowledge and vectors of subject-based knowledge capable of continuous development.

The generality of the representation of the institution's intellectual capital on the scale of the University is subject to gradation in the differentiation of the essential characteristics. Here the *directions of development of the teacher's intellectual capital* (organizational, subject-based, pedagogical and scientific knowledge) which are shown both in teaching



activity (result – high-quality educational service) and in scientific or educational and methodical activity (result – high-quality intellectual product) become fundamental.

As the teacher reaches the required level of competence to perform professional tasks according to the position, the cycle of professional development is completed, that is, there are potential opportunities for solving professional problems of a new level. Triggers can be an internal need of the person (caused by own desires of self-development and potential of development, awareness, and need for constant training) and/or external need (caused by changes of the socio-cultural or professional environment, professional requirements, requests of the educational institution).

The initiation of a new cycle of professional development begins with the definition of its need, direction, development goals and ways to achieve. The guarantee of the teachers' compliance with modern requirements can serve not only professional development in the system of retraining, which is traditionally their duty but also regular certification and self-education. We believe that the development of the above-mentioned hard-, soft-competencies should become a regulated process of the educational system, causing at least a little ahead of the socio-economic development trends. In order for the external need to coincide with the internal need of the teachers, it is important that professional growth allows expanding the boundaries of their pedagogical experience, that is, to provide the field of application of the newly acquired knowledge. This fact determines the correlation between the goals of the teacher and the educational institution in the formation of career strategies to increase the intellectual capacity of the University. In this regard, the development of the teacher's career strategy should be regulated by the activities of the educational institution, contributing to:

- Improving the efficiency and quality of pedagogical work;
- To identifying the prospects of using teaching staff potential;
- Formation of the personnel reserve of the educational institution.

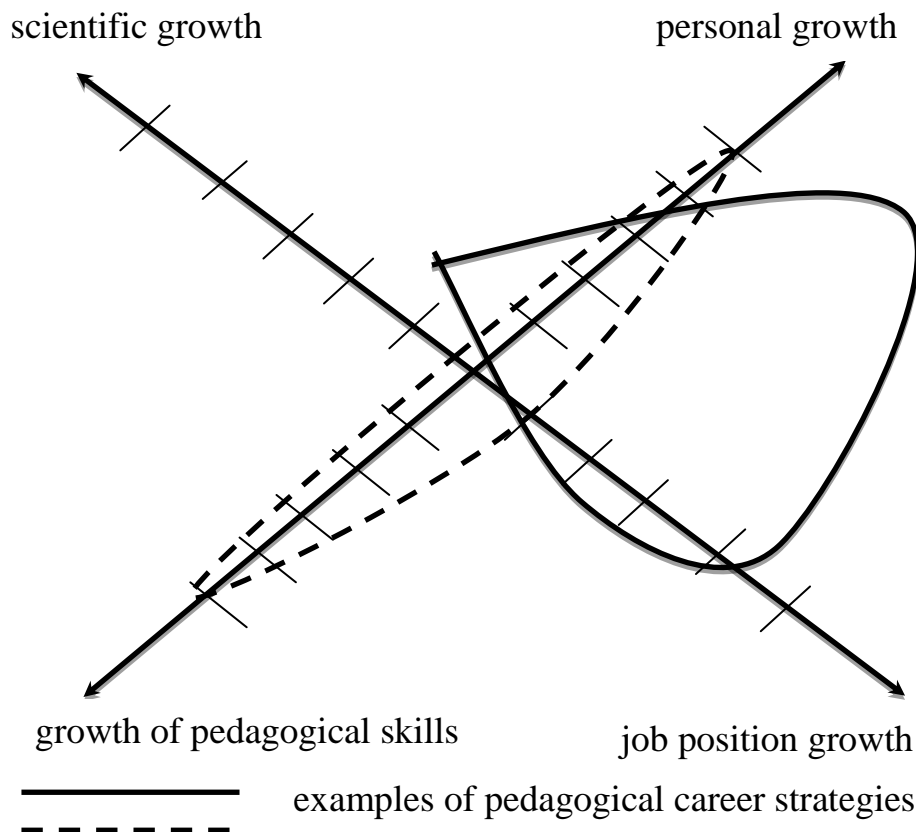
**Pedagogical career strategy** is determined by the scenario formation of the teacher's professional development with an optimally balanced implementation of his/her personal needs and opportunities, as well as the needs of the educational institution and the education system as a whole.

Formation of the teacher's career strategies occurs in personal and professional ontogenesis, closely related – attitudes, abilities, and needs of the individual affect the choice of profession, motivation for occupational training and the level of its effectiveness achievement, adaptation to the profession and place of work, forming a cognitive style of professional and pedagogical activity as a result of perception, thinking, and planning. Conversely, the effectiveness of professional achievements can have a positive or negative impact on the personal ontogenesis of self-estimation formation, motivation to develop, positioning themselves as individuals.

In the teaching profession, we identify the following interrelated areas of development that determine the formation of career strategies:

1. **Personal growth** as a teacher's self-education in possessing certain qualities, change of the "core" of the individual and increase of its potential is based on self-determination, continuous self-development, self-realization, and self-improvement.
2. **Pedagogical skill** as the highest indicator of pedagogical activity caused by the high level of development of social and moral qualities, professional and pedagogical knowledge, skills and the techniques providing the practical embodiment of pedagogical creativity in the solution of pedagogical tasks. Development of pedagogical skill (pedagogical perfection – skill – creativity – innovation) is based on the system of subject-based and pedagogical knowledge, skills, abilities, which in combination with highly developed qualities of the teacher's personality and pedagogical abilities determine the productive creative activity of the teacher ([Safieddine, A., Jamali, D., & Nouredine, S. \(2009\).](#)).
3. **Academic growth of the teacher** as a result of solving independent scientific (theoretical and/or practical) problems in the subject-based or teaching field in order to generate new ideas, theoretical and practical insights contributing to the development of science and practice; involves participation in individual or collective projects, grants, research programs, and can also suggest the stages of the academic career and obtaining degrees in self-selected research area.
4. **The status growth of the teacher** as a change in his official status within the educational institution according to the results of his professional and pedagogical activity, taking into account his abilities and level of professional skill and scientific achievements, involves a change in the social role, job responsibilities, space of official authority.

Features of the teaching profession are such that personal growth, causing cognitive component, activity, and adequate behavioral responses, is in direct correlation with the results of pedagogical work and should be ahead of professional development, as a source and driving force of professional growth in all its manifestations. It is important to note the variability of career pedagogical strategies and their final number in terms of career growth and low mobility outside the education system, while the opportunities for improvement in other areas are limitless, see figure 2.



**Figure 2:** Vectors of career strategies of the teacher on staff training

The variety of possible career strategies is due to the aspirations of the teacher, his/her interests, abilities, readiness for professional growth (pedagogical achievements), and the needs and capabilities of the educational institution in career development. Thus, career strategy in the modern sense appears as a joint acmeological project of the teacher and educational institution to achieve the heights of professional and personal self-realization in the absence of emotional *burnout*, which consists of multidimensional organizational, pedagogical and scientific activities for the implementation of educational processes.

The competency-based paradigm of education assumes the development of *hard-*, *soft* –competencies of the teacher, without rejecting knowledge; on the contrary, knowledge becomes a means of *obtaining* of new information for the development and source of the teacher’s self-education, his/her self-determination, self-actualization and competitiveness in the market of educational services. This position is formed by a new functional imperative of the teacher’s professional growth– project-target approach ([Zverev and Slobodchikov, 2018](#); [Prikot, 2018](#); [Shayakhmetova & Chalikova, 2018](#)), which determines the existence and balance of education as a social system, assuming a new qualitative methodology of intellectual capital development through the basic idea – creation of an advanced prototype (a project of a prototype of an expected or possible object, state) containing prognostic, conceptual, instrumental, reflexive and monitoring components, the result of interaction of which is a reasonable definition of the variants of the predicted development of processes and phenomena ([Zucker, L. G., Darby, M. R., & Brewer, M. B. \(1994\)](#)).

The second component of the approach we are considering is the *goal*. From the standpoint of epistemology, the goal is one of the elements of human activity that characterizes the anticipation in thinking of the activities’ results and ways for their implementation through their own cognitive tools, contributing to the predictive goal setting. Here the goal is to integrate the actions of stakeholders in education in a logical sequence (the system of professional development of the teacher).

The initial position of the trajectory’s formation of the teacher’s professional development is the postulate about the diversity of the motivational needs of the human sphere and its development potential, that is, the individual resource. Its combination with institutional (the education system as a whole), regional (the needs of the region and its specifics), organizational (the needs of the educational institution) resources generate a multiple (but still finite) number of possible career strategies, each step of which is associated with a variety of stages of professional growth and the increment of "hard" and "soft" competencies of the teacher.

This approach is based on the concept of results management (Management By Objectives), which implies the management of the *movement* of the teacher’s (project’s) professional growth to the new results (goal), which at this stage of development are of paramount importance for him/her, responding to the stages of personal career development with

given resource constraints and deadlines, as well as requirements for quality and acceptable level of risk. Understanding the category of *goal* in this approach is the expected effect of the project. The ability of a dynamic active system to manage its behavior and the analysis of activity as a purposeful process presupposes the identification of a mismatch between the current state and the goal. Moreover, the set of methods and means to achieve the goal is to overcome this discrepancy and a way to increment the intellectual capital of the University ([Oliver, A. L., & Liebeskind, J. P. \(1997\).](#)).

## DISCUSSION AND CONCLUSION

The reform of the Russian society and modernization of its most important sphere – education has significantly transformed the main functions of the educational institution, which today should focus not only on the social order of civil society and the state, but also take into account the personal needs of the person, his/her uniqueness, as well as the priority of creating conditions for the most complete identification and development of abilities and self-actualization of each student and teacher ([Gevorkyan, Ioffe and Shalashova, 2018](#); [Vajravelu, 2018](#)).

Moreover, today the Russian professional school has become a full-fledged entity of market relations, which has led to the transformation of its structure, the search for new sources of funding, the development of innovative technologies of training and education, as well as the implementation of social functions: social control, social testing, selection and distribution of the generation entering into an independent working life, according to the social strata and groups, as well as support and social protection of students and teachers in the system of vocational education. Changing the social functions of the educational institutions activates the problem of training human resources for their adequate implementation ([Khasanova and Zaripov, 2018](#)).

Universities under the influence of these macro-changes are transformed into economic corporations, which are managed like corporations, but corporations of a special kind – associated with the manufacturing and dissemination of knowledge. It is important to note that with the diversity of forms and formats of the institution of continuous professional development of teachers, the main emphasis in the European models of professional growth of the teacher is made on the development of his/her reflexive culture ([Karavaeva, 2018](#); [Korzhuev et al., 2018](#)).

Expanding the existing vision, the authors propose the following organizational approach:

1. Emphasis on the formation and development of the intellectual capital of the University through the inclusion in the circle of responsibility of all stakeholders of education with the leading role of the teacher and the educational institution as his/her employer;
2. Taking into account the needs and capabilities of the educational institution and the teacher in the design of career strategies. Their range provides the necessary diversity and the possibility of continuous training of the teacher during all professional activities.
3. formation of the intellectual capital of the educational institution as a specific resource, including *hard* and *soft* competence of teachers, capable of continuous increment and aimed at improving the quality of teaching, and hence to improve the quality of education in General.
4. Management of intellectual capital development should become a key competence of educational institution's management and should be correlated with quality management as a process and result of educational activities.

Thus, the intellectual capital of the educational institution is structured and can be measured, therefore, it can be managed at all stages of its life cycle. Educational institution, which is fundamentally different from the industrial enterprise by the type of organizational resources and a high social role, should integrate several dynamic models of implicit knowledge management for the development of intellectual capital: the model of the balance of education stakeholders' interests; model of teaching staff professional development; project models of intellectual capital management, operating at a certain stage of development.

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