# Quality management principles of scientific and methodological support for students' activity within e-learning environment

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## Abstract

The article highlights the quality management principles of scientific and methodological support for learners 'activity in the Russian university e–learning environment. The science and experiment based work has promoted the creation of the conditions to implement the principles of scientific and curricular support for quality management of students' activity. The fulfillment of the identified principles includes: 1) innovative forms of interaction between the subjects of educational process; 2) education inclusion in the e–learning environment (ELE) that is based on equal learning conditions; 3) technology interaction between a teacher and a learner in ELE; 4) an individual learning trajectory design in ELE. Information technology application provides the opportunity to organize psychologically adaptive and pedagogically proved individual development of educational process participants. It gives learners the opportunity of flexible variable learning, the transition to a new educational framework and quality of knowledge. It contributes into professional skills' formation and reinforces the practice orientation of university education.

## 1    Introduction

The relevance of the quality management problem of activities is due to the necessity to develop common approaches to university e–learning environment. It allows responding flexibly to new demands of the society

in the market of educational services in particular to use informational educational technology in the e–learning environment.

E–learning environment (ELE) as a learning management system (LMS) is a complex of e-learning resouces, information and telecommunication technologies, corresponding to them technological means, providing the educational programs realization by the students in full regardless of their location [Federal Law 273-FZ 16, dated 29 Dec. 2012].

The russian researchers Asmolov A.G., Semenov A.L., Uvarov A.Y. present ELE as "an open pedagogical system that is aimed at the formation of a creative, intellectual and socially developed personality" (2010). According to Skibitskiy A.G. ELE is "the pedagogical process model which implements didactic capabilities of innovative technologies; it allows to organize effectively an individual and collective work between a teacher and a student. Moreover, it integrates various forms and strategies of knowledge development in the academic discipline, aimed at the development of students targeted independent cognitive activity" (2009). Most researchers agree that its application provides equal opportunities for learners education according to the requirements of legal documents based on common technological, software, information and telecommunication means, related content.

Belgorod State National Research University (BSNRU) adopted the Development Program for 2010-2019 (Development Program of BSNRU). In pursuance of this Program, there were different events such as:

- in order to form a modern infrastructure for the high-tech innovative products manufacture Technopark has been opened at the University;

- Engineering school and College have been organized and created;

- the cluster development centers have been established;

- regional innovation development projects are being implemented, among them biotechnological and biopharmaceutical clusters;

- the regional Technopark is being developed, different programs such as "Electronic University" are being realized.

Nowadays the administration and the staff of BSNR have solved most of informatization tasks such as:

- IT–infrastructure was formed, some automation tools for certain types of activities were introduced;

- IT–services, educational and scientific divisions such as informatization management department, specialized academic departments, e–learning technology department and Computer training center were created;

However, in the learning management system there are some contradictions: 1) the e–learning environment and the lack of the developed quality management principles of scientific and methodological support for future specialists' activity in this environment; 2) the availability of information learning technologies and insufficient readiness of teachers to use them in the educational process.

Thus, the aim of our reasearch was to develop and implement the quality management principles of scientific and methodological support for students' activity within the e-learning environment.

## 2 Literature Review

Here we review the scientific literature on the research problem. The analysis of the resources on learning management system shows that the problems of higher education specialists training quality have been studied in the works of such researchers as E.N. Perevoschikov [26], N.A. Seleznev, A.I. Subetto, Timmermann [42] and others. The basics of education quality management are presented by G. A. Bordovsky, A. A. Nesterov, S. Yu. Trapitsyn [4], M. M. Potashnik [28]. The studies of O. V. Aristova [2], B. I. Gerasimova [12], E. B. Gerasimova [12], I. I. Mazura [23], T. A. Salimova [32], A. Yu.Sizikina, D. Gnahs [40] reveal various aspects of quality management. The studies of L. I. Vasilyeva [9], V. A. Volkogon [10], A. I. Golubeva [8] characterize the peculiarities of activity quality management in different types of educational organizations.

It should be pointed out that in the context of specialists training quality management the organizational and structural aspects of management are more often analyzed (L. I. Vasilyeva [9], T. A. Salimova [32], S. A. Stepanov). However, the pedagogical conditions for effective quality management have been less studied (B. C. Suvorov, I. I. Tuber, V. V. Cheskidov).

In our research, we based on:

- the theoretical groundings of information technologies used in the learning process (A. A. Andreev [1], V. P. Bespalko, A.V. Boeva, B. I. Kanaev, P. I. Samples, V. I. Soldatkin, A.V. Khutorskoy (2016), etc);

- The E-learning environment as a pedagogical system (A. G. Asmolov, A. L. Semenov [3], E. G. Skibitsky [33] and etc.);

- innovative approaches in education (V. M. Polonsky, G. Yu. Gulyaev and others),

- the e-learning and blended learning (A. Y. Uvarov, V. Kukharenko [21], E. S. Polat, M. Y. Bukharkina [17], etc.);

- an individual educational trajectory in the educational process (G. A. Bordovsky [4], S. A. Vdovina, E. A. Klimov (2013), B. C. Merlin, N. N. Surtayeva (2009), I. S. Yakimanskaya (2010), etc.);

- inclusiveness in education (A. Vokhmyanin [11], O. S. Kuzmina, N. Ah. Medova, A. Y. Chigrina and others);

- conceptual issues of information technology training tools application in the educational process (E. D. Karmanova [18], A. M. Derkach [13], N. Pelling, Donald Clark [37], Dr. Arne May, Brenda Enders, Zichermann, Cunningham and others).

The issues of the educational process modernization that are based on informational and communicational technology (ICT) at the university, distance learning technologies (DLT) and the e–learning are covered in the scientific paper by A. A. Andreeva (2002), M. V. Moiseeva, E. S. Polat, M. Yu. Bukharkina, M. I. Nezhurina (2004) and others. A. P. Avramenko, N. Doronina, K. V. Karanikolas highlighted the didactic features of ICT sometimes called mobile technology. E. A. Budenkova [7], O. V. Borshchova, E. D. Kosheleva, Yu. Yu. Markova presented WEB- 2.0. V. Navalochnaya, T. V. Khomchenko, A. K. Cherkasov defined Web forum. T. I. Gustomesovo, O. E. Lomakina, N. Sushkova, O. V. Freze promoted e–mail group. The analysis of the e–learning innovative organizational forms is represented by A. V. Abramova, M. P. Karpenko, I. B. Revich, V. N. Fokina.

The efficiency of the special education system in Europe and America are studied by C. Thomas, P. Walker, J. Webb [44]. L. Florian and D. Pullin [41] describe the inclusive education practice implementation for children with physical disabilities in the UK and the USA. E. Wright [45] has developed the system of principles for inclusive learning ideas implementation and recommended the ways to develop the inclusive education practice for children with disabilities in different countries of the world.

We considered T. Parsons fundamental ideas about the integration processes organization in social systems [25]; P.A. Sorokin research on social integration and mobility; the ideas of John G. Mead [24] and C. Hooley [20] about the social role, the essence of the other people individual perception processes.

## 3   Theoretical foundation

The theoretical foundation of our research includes the conceptual issues:

1) quality management, higher and vocational education pedagogical systems management (Yu. P. Adler, A. V. Glazunov, J. A. Konarzhewski, V. P. Panasyuk, M. M. Potashnik, O. A. Safonova, P. V. Simonov, S. A. Stepanov, B. C. Suvorov, P. I. Tretyakov, R. H. Shakurov, T. I. Shamova and others);

2) modern pedagogical technologies of training and professional competence formation (V. P. Bespalko, E. V. Bondarevskaya, N. M. Zvereva, I. Y. Lerner, P.I. Pidkasistyj, G. K. Selevko, , V. V. Serikov, V. D. Shadrikov, I. S. Yakimanskaya, N. G. Yaroshenko and others).

The legal data base which is the foundation for the regulation of the university's activity to use innovative forms of interaction between the subjects of a learning process in the e–learning environment (Federal Law 273–FZ 16, dated 29 Dec. 2012) [36], (Federal State Educational Standard). The development program of Federal State Autonomous Educational Institution of Higher Education "Belgorod State National Research University" for 2010–2019 (The Development Program of BSNRU) [29] provides the improvement of learning process methodological and information support. It creates the conditions to realize the principle system of scientific and methodological support for students' educational and cognitive activity in the e–learning environment.

In our study, we consider the e-learning environment as a system where the quality management principles of scientific and methodological support for students' activity are realized.

Thus, in the scientific literature there is a consensus that the e–learning environment significantly expands the opportunities for "teacher — student" interaction. Moreover, it provides an equal opportunity for all students to participate in the learning process based on common technological, software, information and telecommunication means with content related (A. G. Asmolov, A. L. Semenov, A. Yu. Uvarov, E. G. Skrebitsky) [3].

The E-learning environment provides the opportunity for updating the interaction forms between the subjects of the educational process. Considering the concept "innovation" we based on the studies by V.M. Polonskiy (2003) [27] who pointed out that "an innovative process is always directed to improve the system in which the novelty is being introduced and involves stimulating this process participants, changing their views from the standpoint of innovation". For example, gamification is an innovative technology of learning involvement. It means the selection and formation of attractive elements for students' activity and their integration into the e-learning. The main conception of gamification in teaching consists of the following aspects: 1) "to catch and

keep learners' attention" (Dr. Arne May, Brenda Enders, Zichermann, Cunningham), 2) "to raise a problem", 3) "to captivate", 4) "to teach with interest" (Erica Lasola–Caramol, Pranjalee Lahri, Donald Clark) [37, 39].

ELE as a powerful tool for the e–learning and distance learning technologies gives teachers the opportunity to develop and realize individual learning routes, programs and curriculums according to students' personal and age characteristics. N.A.Labunskaya (2002) [22] considers student individual educational route as a purposefully designed differentiated educational program .The concept of "individual educational trajectory" is broader and provides not only an individual educational route as a meaningful component (it means variable curricula and educational programs determining an individual educational route) but the way to realize it through the technologies of educational process organization (S. A. Vdovina (2013), N.N. Surtaeva (2009), I. S. Yakimanskaya (2010), Yu. Shaposhnikov (2015), S. L. Kliminskaya (2014), A.V. Khutorskoy (2016)).

ELE provides great opportunities for ensuring inclusiveness in the education. UNESCO considers inclusion as a process which is directed to satisfy different needs of children, youth and adults by means of their increasing participation in learning process, life and cultural activity of the society and reducing some groups from the education system and within it (2009) [30]. Convention on human rights of people with disabilities (2006) [19] recognizes the fact of the UN principle proclaiming that every person has all stipulated rights and freedoms without any distinction.

# 4 Methodology

The methodological basis of our study included a systematic approach (I. V. Blauberg [5, 6], V. N. Sadovsky [31], E. G. Yudin [5] and others); system-activity approach (V.I. Baidenko, M. G. Rogov, V. P. Simonov, A. I. Subetto and others); personality–activity approach (M. S. Zavyalova, I. A. Zimnaya, N. Ah. Novikova, Yu. B. Rogacheva and others); an integrated approach (S. K. Bondyreva, V. Gudonis, D. Dewey, De Caluwe, Yu. M. Kolyagin); environmental approach (E. P. Belozertsev, Y. S. Manuilov, L. I. Novikova).

# 5 Discussion, reasoning

Considering the opportunities, provided by the e-learning environment of Belgorod State University we present ELE as a complex system of automation management for all kinds of university activities including students' interaction with administrative, pedagogical and educational support staff.

Thus, basing on the characteristics of the e-learning environment as the ground for the learning management system for activities at the University, we have identified the following principles:

## 5.1 Principle 1. Innovative forms for interaction between the subjects of the educational process

Within the e-learning environment the use of information technology in teaching has allowed to introduce the interaction forms between its subjects in the following systems "teacher — learner", "learner — learner": lectures (audio, video, slide lecture, text); tutorials (individual and/or group forums on–line or off–line, chats, correspondence by e-mail, etc.); seminars (webinars in the mode of audio– and video conferences, epistolarity); projects (research, information, etc.); laboratory and practical classes (remote access to the laboratory installation, simulation/ a computer process modelling); individual homework (essay, summary, professional task, etc.); testing (continuous, final); exams/ credit tests, games, solving situational problems taks (case–study method); design of students educational research; educational and research practices, excursions and etc.

In this regard, the role of a university teacher has being changed. In ELE he serves as a subject of a professional activity, a designer and organizer of training courses, an expert of students activity, a tutor, a coach and a facilitator. The opportunities of ELE enabled teachers to apply any of these roles, to accumulate their teaching and methodological developments in a single virtual environment, to use new forms of interaction with students, to realize their own creative potential to improve the quality of the educational process. In the course of future specialists professional training university teachers studied and applied new approaches to organize and manage educational process. They used innovative methods and means of teaching, interaction forms and technologies with students in every possible way.

The research has revealed that gamification is the element of learning activity. It promotes a selection, a formation of students intellectual and other activities attractive elements and their integration into e-learning. Gamification is considered as a set of tasks with their phased implementation and reward according to the training purpose making learner's motivation formation to perform definite training actions A wide range of opportunities for students effective thinking activity in the form of quizzes and problem games was obtained. It

allowed to carry out "the transition from passive learning position to an active one and move forward to acquire necessary experience" [37].

The work in ELE allowed to have an additional tool for comfortable subject interaction in various formats and systems such as "learner — learner", "teacher — learner" and "teacher — teacher". To have an additional feedback in our ELE we used a diagnostic tooling in the form of questionnaires, organizational forums, chats, webinars, e–mail. In order to have productive interaction in the system "learner — learner" in ELE virtual learning communities were created. They carried out the communication and moderation of forums, the collection and processing of feedback, the help to fellow students in the study of disciplines, etc.

## 5.2 Principle 2. Education inclusiveness in the e–learning environment based on equal learning conditions

According to the monitoring of the research center "Special opinion" in Russia about 20 thousand people with disabilities receive higher education: 3.07% is is disabled at the age of 18 to 30 years. About 5 million students study in Russia, one in four in this age range. In Russia each year about 5 thousand of persons with disabilities enter universities. It means 10% of the available budgetary places (the average quota) [11]. As the university experience proved to make inclusion successful it is, first of all, necessary to change an educational environment.

The use of the educational component in electronic informational environment allowed to increase the availability degree of educational services for all categories of students regardless of their health, development peculiarities, social status, distance from an educational institution. For people with disabilities the opportunities of ELE provided the access to the learning content and interaction with teachers. It also means the opportunity to participate in the educational process with the effect of "real presence". Built–in web conferencing elements allowed teachers to conduct classes for real and virtual students who connected to the learning process in a virtual classroom electronic environment. To have an ordinary webcam was enough for the teacher and the "remote" student to see,participate and interact with all subjects of the learning process.

Belgorod State National Research University implemented the combined training mode. It was done as a pilot project for students with limited health opportunities and studying with distance learning technologies. It involved a real lesson in the classroom with modern telecommunication technologies, on-line. At will the students could attend classroom classes in real or virtual, by connecting to the broadcast via a webcam. The teacher interacted at the same time with the students in the class and with those involved in the lesson through the webinar in the appropriate course of PEGAS system (LMS Moodle). Thus, the students who were temporily absent at the university classes (illness, the remoteness of the residence place, economic reasons, etc.) got a unique opportunity to listen to the lecturer, to participate and be involved in the learning process.

## 5.3 Principle 3. Interactivity of interaction technologies between a learner and a teacher in the e–learning environment

The content of the training implemented at ELE was organized as interactive. It contributed to the introduction of active e-learning methods and distance educational technologies. In our research we considered the e-learning as an organization of educational activities with information technology, technical means, and also information and telecommunication networks providing "student - teacher" interaction in ELE. Distance educational technologies were considered by us as a way of consistent interdependent teacher's actions implemented in the indirect (at a distance) "student - teacher" interaction with information and telecommunication networks.

The use of the interactive methods and the e-learning technologies, in particular, web 2.0 technologies, allowed to rethink the experience of using "personal and activity approach in training such as cooperative learning, project and case-study methods, academic portfolio. It also contributed to the development of students' skills to work in a multinational team, in innovative projects, to be more receptive to new ideas, ways and means of learning. In our ELE we used interactivity to change activities, switching students' attention, working out different scenarios of interaction and communication, "immersion" in the atmosphere of the real environment and involvement into the learning process. We prepared an approximate correlation of educational and cognitive tasks and web-technologies on a specific example. It was done to determine "how is it possible to use a variety of technologies to achieve the definite educational goals?"

1. For knowledge formation (the level of familiarity, understanding) (B. Bloom): lectures in electronic form (video and audio lectures), links to specific sources of information on the Internet, interactive glossaies (list of concepts), tests, surveys, chats, crosswords, discussions in the forum (to comment on anything, to explain the reasons, etc.) were used.

2. For skill formation (level of application, analysis) (B. Bloom) forums (virtual seminars), tasks with reports on the implementation of practical and laboratory studies (wiki, virtual laboratory complexes), calculation and graphic tasks based on data, webinars with analysis of basic issues, presentations (Prezi); joint filling tables, drawing up schemes (Google+, Cacoo, etc.), electronic consultations (text chat), training tests were used.

3. At the level of synthesis and evaluation, brainstorming was carried out (in synchronous - on–line and asynchronous — off–line modes). Project tasks, Web quests (role distribution, task formulation, coordination of work), business games (ISpring), situational tasks (case-study), scientific conferences, discussion forums, webinars, blogs (self-reflection), expert evaluation of own and other electronic resources, their development and application in the educational process were done.

In our study, the particular scientific interest was attracted by the interactive communication technology use in the e-learning environment of BSNRU. Students, undergraduates, graduates and postgraduates of distance learning technologies, at any time could access the materials in the e–learning system, participate in asynchronous discussions, remotely perform tasks, view the individual teaching route of the course with deadlines and points to obtain estimates. The E–learning environment functioned as a medium for "a learning and professional immersion" of students and real practice, where they received skills that could be evaluated.

In the course of interaction between the ELE subjects using interactive forms the feedback played an important role. At the same time, the forms of interaction were systematically expanded: on-line interaction included discussions in a videoconference, a survey, testing at the end of a lecture fragment, etc.; off–line interaction consisted of automated test check in the course, oral and written tasks, reviews on students' tasks, recommendations for further study of the course, etc.

In our research we proved that the control of educational activity in the e-learning system as a type of feedback is effectively carried out by the teacher in the following interactive forms: interaction with students in ELE during the lesson in real time; discussion in the forum during debates, seminars, etc.; testing (automatic check, check and redefinition of grades); students perform tasks that require a detailed response (check, review of the answer, assessment).

## 5.4 Principle 4. The design of individual learning trajectory in ELE

Belgorod State University provided favorable conditions to consider individual and personal characteristics of learners. The e-learning environment with a variety of interactive elements allowed teachers with minimal "labor" costs to implement individual and environmental approaches to learning. As a matter of fact, it contributed to the satisfaction of educational, information, communication needs of every student. This activity management guaranteed the achievement of the learning objectives through pedagogical possibilities of virtual learning environment.

In our experience in the design of student's individual educational trajectory in ELE the teachers developed schedule to study each discipline (SSD) for students using distance learning technologies. The aim of SSD is to provide an individual educational trajectory (IET) of the student in the intersessional period of the academic year.

When making SSD the teachers correlated the planned activities with the technologies possible to achieve the desired learning results. The academic course is not overloaded with a large number of tasks. It was done according to the number of hours for students' independent work within this discipline. The university teachers calculated the duration of a specific task and made SSD with the necessary number of tools (elements) to perform control tasks (intersessional sessions).

An individual educational trajectory for students was provided by the electronic course variability and the management of their individual learning and professional activities. It limited the access to the elements in the process of studying the discipline. Different types of variability include: topics of elective e–course, elective tasks and activities within the same topic, the level of complexity within the framework of one task. The variable part is determined by the student and / or the teacher, as well as automatically adjusted depending on the result of previous works (tasks of different levels). At the same time, the internal mechanisms of ELE allow to set up an automatic level approach, for example, admission to the next level is open if the student has scored at least 70% of the current level.

Thus, having based on the above principles of scientific and methodological support for quality management of activities we defined the following pedagogical conditions of the information technology use to effectively develop knowledge among students in ELE. They are: 1) the use of innovative forms and interaction methods between participants in ELE; 2) the ensuring equal opportunities for all categories of learners, regardless of their

personal characteristics, access to educational content, interaction with teachers and possibilities to participate in the learning process with the effect of "real presence"; 3) the use of interactive tools, e-learning services and distance learning technologies to change activities, switch students' attention, work out different scenarios of interaction and communication; 4) the design of students' individual educational trajectory, which allows to take into account their individual and personal characteristics, to implement an individual approach to learning by meeting the educational, information, communication needs of students.

## 6 Empirical Results

The efficiency of Quality Management Principles of Scientific and Methodological Support for Activity on the basis of systematic, integrated, activity and environmental approaches in ELE was confirmed during the testing of students' residual knowledge in 2017. The purpose of the test was to assess the conformity degree of the scientific and methodological support of learners' activity quality management in the e-learning environment to the requirements of Federal State Educational Standards (FSES). It was carried out by receiving independent information about the students' educational achievements in the framework of the internal education quality assessment system in National State Research University.

The results of residual knowledge assessment were placed in the information and analytical map by sections, reflecting the students' performance of the FSES requirements in such contexts as: academic groups and degrees of discipline development in the training areas according to the profiles; the number of students who need to improve the training quality in the tested disciplines.

780 third year students (bachelor's degree/specialty) of full-time education from different structural units of BSNRU took part in the testing of residual knowledge. It was 47.32% of the total number of the third year students. The test was conducted in 53 academic disciplines. The funds of tests created by the university teachers and placed in the e-learning system "PEGAS" were used. As a criterion for the FSES requirements implementation in the disciplines the value of the discipline development by students of at least 50% was accepted. This approach is based on the requirements of the Federal Internet exam in higher education.

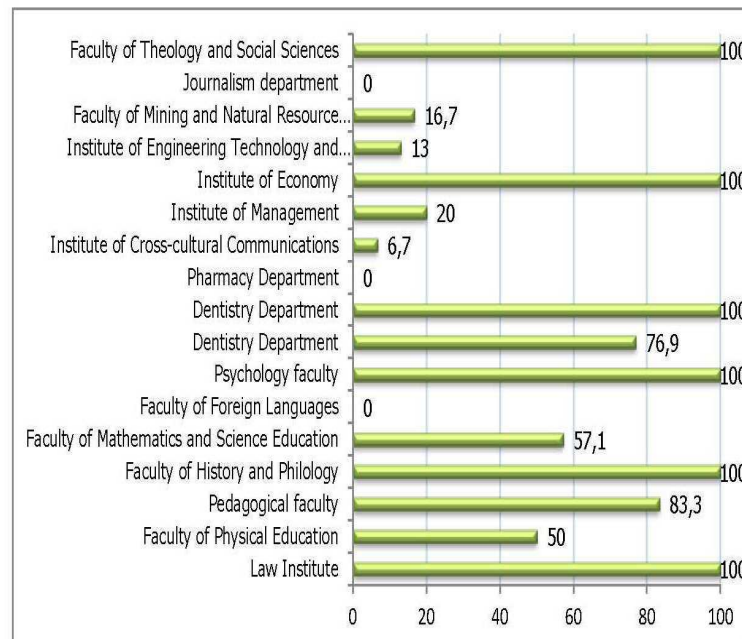The average values obtained are shown in the pictures below:



Figure 1: The 3rd year academic groups participation in the residual knowledge testing in the context of structural units, %

Less than 50% — 8 disciplines (15.1%); 50%–70% - 31 discipline (58.5%); more than 70% — 14 disciplines (26.4%) were mastered out of 53 tested disciplines.
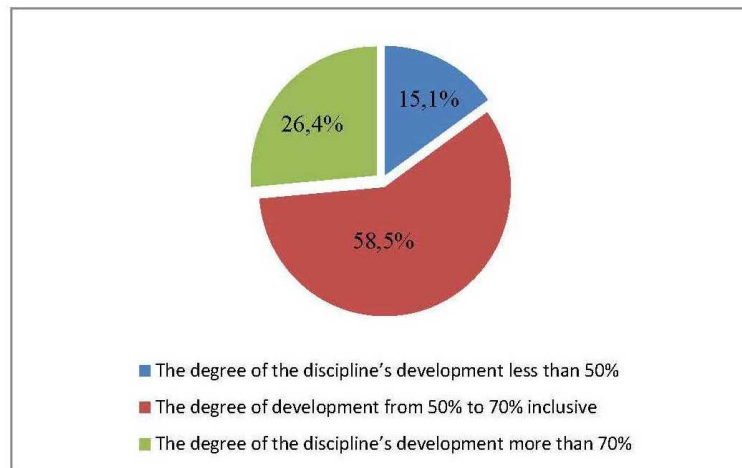
Figure 2: Indicators of compliance with the FSES requirements in the context of the disciplines' development degrees (average group, %)
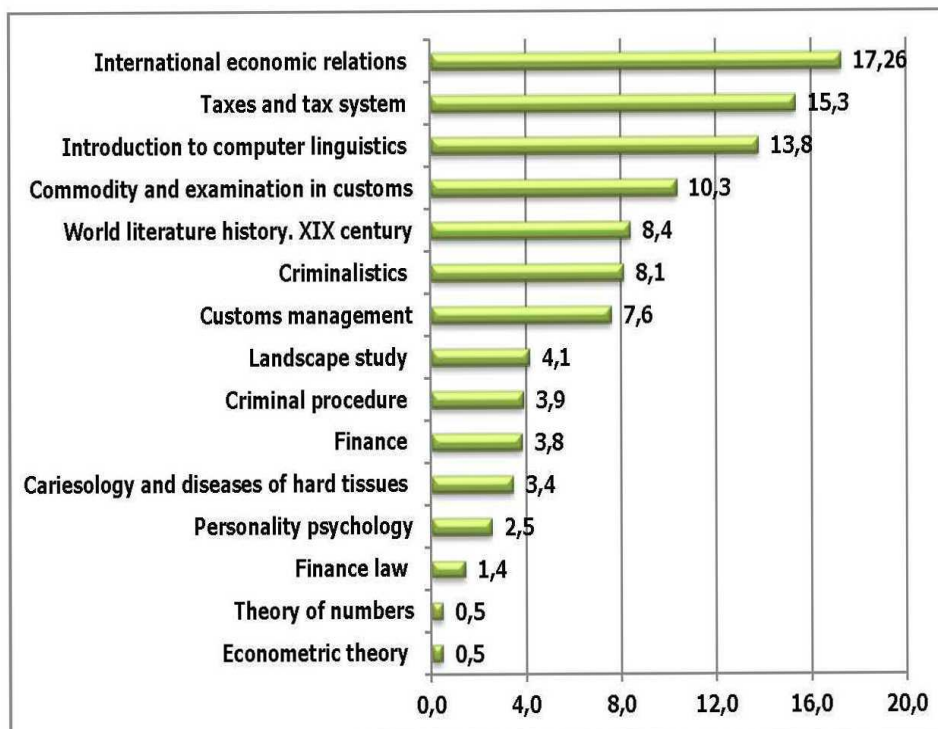


Figure 3: The disciplines in which students improved the result, %

As the figures show, in many disciplines there is a positive dynamics of the results, obtained in the course of residual knowledge testing compared with the results of the winter examination session. Thus, in the discipline "International economic relations in the context of globalization" the increment was more than 17%. The discipline "Taxes and tax system" — more than 15%, the discipline "Introduction to computer linguistics" — about 14%, etc.

# 7 Summary and Conclusion

The current state of the education system in Russia testifies to the prospects of our approaches and quality management principles of scientific and methodological support for students' activity within the university e-learning environment.

The implementation of the indicated principles has provided the organization of personal development for all educational process subjects. It supported students with the possibility of flexible variable learning; it allowed moving to a new paradigm of education; it gave a new quality of knowledge transfer and assimilation, professional skills formation; it reinforced the applied direction of the learning process at the University.

To improve the quality management of education within Belgorod State University e-learning environment the following activities will be developed:

1. Implementing the quality management principles of scientific and methodological support for students' activity within e-learning environment;

2. Perfecting the methodological support content for quality management of students' activities;

3. Using systematically the technology enhanced learning (TEL).

# 8 Acknowledgement

# References

[1] A. A. Andreev. *Pedagogika vysshey shkoly. [Pedagogy of higher education]. Novyy kurs.* Moscow: Moskovskiy mezhdunarodnyy institut ekonometriki, informatiki, finansov i prava, 2002. (in Russ.)

[2] O. V. Aristov. *Upravlenie kachestvom [Quality management].* Moscow: INFRA-M, 2003. (in Russ.)

[3] A.G. Asmolov. *Rossiyskaya shkola i novye informatsionnye tekhnologii: vzglyad v sleduyushchee desyatiletie [Russian school and new information technologies: a look into the next decade].* Moscow: FIRO i VTsRA, 2010. (in Russ.).

[4] G.A. Bordovskiy, A.A. Nesterov, S.Yu. Trapitsyn. *Upravlenie kachestvom obra-zovatelnogo protsessa [Quality management of educational process].* Saint Petesburg: Izd-vo RGPU im. A.I. Gertsena, 2001. (in Russ.).

[5] Blauberg, I.V., Sadovskiy, V.N., Yudin, E.G. *Sistemnyy podkhod v sovremennoy nauke [System approach in modern science]. Problemy metodologii sistemnogo issledovaniya. [Problems of system research methodology].* Moscow, 1970. (in Russ.).

[6] Blauberg, I.V., Yudin, E.G. *Stanovlenie i sushchnost sistemnogo podkhoda [Formation and essence of the system approach].* Moscow: Nauka, 1973. (in Russ.).

[7] Budenkova, Ye. A., Tsvelyukh, I. P. *"Obuchenie v sotrudnichestve" sredstvami Veb 2.0 [Learning in collaboration with Web 2.0 tools]. Vysshee obrazovanie v Rossii,* 11: 117–124, 2011. (in Russ.).

[8] Golubeva, A.I., Perevoshchikova, Ye. N. Postroenie modeli upravleniya kachestvom obrazovatelnoy deyatelnosti v ssuze [Building the quality management model of educational activities]. *Srednee professionalnoe obrazovanie,* 2: 12–15, 2008. (in Russ.).

[9] Vasileva, L.I. *Protsessnaya model obespecheniya kachestva obrazovatelnoy deyatelnosti v vuze [Process model of quality assurance of educational activity in higher education institution] (Doctoral dissertation).* Nizhny Novgorod, 2006. (in Russ.).

[10] Volkogon, V.A., Revin, S.A. Sistemnoe upravlenie kachestvom podgotovki spetsialistov [The system of training quality management]. *Srednee professionalnoe obrazovanie,* 6: 6–16, 2016. (in Russ.).

[11] Vokhmyanin, A. Inklyuzivnoe obrazovanie v Rossii: preodolenie skepsisa, byurokratii i pravovoy diskriminatsii [Inclusive education in Russia: overcoming scepticism, bureaucracy and legal discrimination]. *Available at*: http://libinform.ru/read/articles/Inklyuzivnoe-obrazovanie-v-Rossii-preodolenie-skepsisa/ (accessed 25 December 2017) (in Russ.).

[12] Gerasimova, Ye.B. *Upravlenie kachestvom [Quality management]*. Moscow: FORUM: INFRA-M, 2007. (in Russ.).

[13] Derkach, A.M. Keys–metod v obuchenii [Case-study method in training]. *Spetsialist*, 4: 22–23, 2010.*Available at*: http://elibrary.ru/item.asp?id=15341396 (accessed 25 december 2017). (in Russ.)

[14] Dyurkgeym, E. *Sotsiologiya. Yee predmet, metod, prednaznachenie. [Sociology. Its subject, method, purpose]*. Moscow: Kanon, 1995. (in Russ.).

[15] Zimmel, G. *Obshchenie. Primer chistoy ili formalnoy sotsiologii. Izbrannoe. Sozertsa-nie zhizni [Communication. An example of pure or formal sociology. Favourites. Contemplation of life]*. Moscow: Yurist, 2: 486–500, 1996. (in Russ.).

[16] *Innovatsionnye podkhody v nauke i obrazovanii: teoriya, metodologiya, praktika: monografiya [Innovative approaches in science and education: theory, methodology, practice: monograph]*. Penza: MTsNS "Nauka i prosveshchenie", 2017. *Availaible at*: http://naukaip.ru/wp-content/uploads/2017/02/.....compressed.pdf (in Russ.).

[17] *Internet–obuchenie: tekhnologii pedagogicheskogo dizayna [E-learning: technology and pedagogical design]*. Moscow: Izdatelskiy dom "Kameron", 2004. *Available at*: http://e-biblio.ru/xbook/new/xbook302/files/course/Internet-2004.pdf (in Russ.).

[18] Karmanova, Ye.D. Primenenie igrovogo podkhoda v obuchenii [The use of a game approach to learning]. Nauchnoe soobshchestvo studentov XXI stoletiya. Gumanitarnye nauki: Sb. statey po materialam XLVIII Mezhdunar. stud. nauch.–prakt. Konferentsii, 11(48). *Available at*: URL: https://sibac.info/archive/guman/11 (48).pdf (accessed 25 December 2017) (in Russ.).

[19] *Konventsiya o pravakh invalidov [Convention on the rights of people with disabilities]*. *Available at*: http://www.un.org/ru/documents/decl_conv/conventions/disability.shtml (accessed 25 December 2017) (in Russ.).

[20] Kuli, Ch.Kh. *Chelovecheskaya priroda i sotsialnyy poryadok [Human nature and social order]*. *Available at*: www.i-u.ru/biblio/archive/kulichelov/ (accessed 21 May 2018) (in Russ.).

[21] Kukharenko, V. *Smeshannoe obuchenie [Blended learning]*. *Available at*: http://www.scoop.it/t/blended-learning-by-v-kukharenko (accessed 04 April 2017)

[22] Labunskaya, N.A. Individualnyy obrazovatelnyy marshrut studenta: podkhody k raskrytiyu [Individual educational route of the student: approaches to disclosure]. *Izvestiya Rossiyskogo gos. ped. un-ta im. A.I. Gertsena*, 2 (3): 79–90, 2002. *Available at*: https://cyberleninka.ru/article/n/individualnyy-obrazovatelnyy-marshrut-studenta-podhody-k-raskrytiyu-ponyatiya (in Russ.).

[23] Mazur, I. I. *Upravlenie kachestvom [Quality management]*. Moscow: Omega L, 2006. (in Russ.).

[24] Mid, Dzh. G. *Aziya. Teksty / Amerikanskaya sotsiologicheskaya mysl [Asia. Texts / American sociological thought] (eds. Dobrenkova V.I.)*. Moscow: Izd-vo MUBiU, 1996. (in Russ.)

[25] Parsons, T. *Sistema sovremennykh obshchestv. [System of modern societies]*. Moscow: Aspekt Press, 1998. (in Russ.).

[26] Perevoshchikova, Ye. N. Reytingovaya sistema otsenivaniya deyatelnosti kak sredstvo upravleniya kachestvom obrazovatelnogo protsessa po spetsialnosti [Rating system of activity evaluation as a means of quality management of educational process in the specialty]. *Innovatsii v obrazovanii*, 12, 2007. (in Russ.).

[27] Polonskiy, V.M. *Innovatsionnye protsessy v obrazovanii. Pedagogika [Innovative processes in education. Pedagogy]. (eds. Pidkasistogo P.I.).* Moscow: Pedagogicheskoe obshchestvo Rossii, pp. 425-442, 2003. *Available at:* gpa.cfuv.ru/courses/os.../Pedagogika%20pod%20red.%20Pidkasistogo%20P.I.PDF (in Russ.).

[28] Potashnik, M. M. *Kachestvo obrazovaniya: problemy i tekhnologiya upravleniya [Quality of education: problems and management technology].* Moscow: Pedagogicheskoe obshchestvo Rossii, 2002. (in Russ.).

[29] The program of development of Federal State Autonomous Educational Institution of Higher Professional Education "Belgorod State National Research University" for 2010–2019. *Available at:* http://niu.bsu.edu.ru/niu/_files/NIU.pdf (in Russ.).

[30] Rukovodyashchie printsipy politiki v oblasti inklyuzivnogo obrazovaniya (2009) [Policy guidelines principles for inclusive education] (Published by UNESCO 7, place de Fontenoy 75325 Paris 07 SP France - YuNYeSKO 2009 g.). *Available at:* http://umcvpo.ru/sites/default/files/documents/%D0%BC9.pdf (in Russ.).

[31] Sadovskiy, V.N. *Sistemnyy podkhod i obshchaya teoriya sistem: status, osnovnye problemy i perspektivy razvitiya [System approach and General system theory: status, main problems and prospects of development].* Sistemnye issledovaniya. Moscow, pp. 29-54, 1987. (in Russ.).

[32] Salimova, T.A. *Upravlenie kachestvom: uchebnik po spetsialnosti "Menedzhment organizatsii" [Quality management: textbook on the specialty "Management of the organiza-tion"].* Moscow: Omega–L, 2008. (in Russ.).

[33] Skibitskiy, E.G. Informatsionno-obrazovatelnaya sreda vuza: tsel ili sredstvo v obespechenii kachestva obrazovaniya? [Information and educational environment of the University: the purpose or means in ensuring the quality of education?] *Trudy SGA,* 6: 52–67, 2009. *Available at:* http://www.edit.muh.ru/content/mag/trudy/06_2009/06.pdf (in Russ.).

[34] *Sovremennye pedagogicheskie i informatsionnye tekhnologii v sisteme obrazovaniya [Modern pedagogical and information technologies in the education system] (eds. Polat Ye.S., Bukharkina M.Yu.).* Moscow: Izdatelskiy tsentr "Akademiya", 2010. (in Russ).

[35] Sorokin, P.A. *Sotsialnaya analitika. Analiz elementov vzaimodeystviya* [Social Analytics. Analysis of the interaction elements] Teoreticheskaya sotsiologiya: Antologiya, V 2. Moscow: Knizhnyy dom "Universitet", 2002. (in Russ).

[36] Federal Law 273-FZ, dated 29 Dec. 2012, "On education in the Russian Federation". *Available at:* https://fzakon.ru/laws/federalnyy-zakon-ot-29.12.2012-n-273-fz/statya-16 (accessed 15 May 2018) (in Russ.).

[37] Donald, Clark. *Gaming Design For E–learning. Available at:* http://goo.gl/fb/QZ2hbZ (ac-cessed 25.12.2017).

[38] E–learning and the Science of Instruction. *Available at:* http://e-lpro.blogspot.ru/2014/05/e-learning-and-science-of-instruction-1.html (accessed 05 December 2017) (in German).

[39] Lasola-Caramol, Erica. *4 Ways Gamification Transforms e–Learning Experiences. Available at:* https://elearningindustry.com/4-ways-gamification-transforms-elearning-experiences. (accessed 04 December 2017).

[40] Gnahs, D. *Qualifizierung in der Weiterbildung* [Professional development], Manuskript, 1994.

[41] Florian, L. *Special Education and School Reform in the United States and Britain.* London and New York: Routledge, 2000.

[42] Krohner, S., Timmermann, D. *Qualita tssicherung durch Qualitatsmanagement* [Quality assurance through quality management], Bielefeld, 1997. (in German).

[43]     Pranjalee, Lahri Games vs Game–based Learning vs Gamification.          *Available    at*: https://www.upsidelearning.com/blog/index.php/2015/05/21/games-vs-game-based-learning-vs-gamification (accessed 04 December 2017)

[44]     Thomas, G., Walker, J. *The Making of the Inclusive School*. London and New York: RoutledgeFalmer, 1998.

[45]     Wright, E.B. Full Inclusion of Children with Disabilities in the Regular Classroom: Is It the Only Answer? *Social work in Education*, Vol. 21, 1, 1999.