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**SOME DIRECTIONS OF ACHIEVEMENT HIGH-QUALITY OF NEW  
LEVEL OF EDUCATION (by experience of using modern pedagogical educa-  
tional technologies in the National technical university "Kharkiv polytechnic institute")**

Humanity entered new stage of history of the civilization. Its main characteristic is the innovative type of world development.

Moving to the new high-quality level of development of society, the fundamental changes of aims and character of public production lead to the change of requirements to professionalism and personal qualities of specialists.

Considerable increasing of information content and speeding up the cycle of its renewal in limited study terms, the development of informatively-communicative technologies require intensifications of educational-cognitive activity of students due to introduction of modern pedagogical technologies.

Nowadays many researchers admit that the reproductive model of transmission knowledge became ineffective. Creation of new pedagogical technologies is connected with refusal from the stereotypes of traditional education (with maintenance all the best that pedagogy has) and forming new thinking.

In this connection the problems of development such things become actual:

- new content, methods and facilities of teaching;
- considerable deepening of theoretical base of knowledge;
- strengthening of the applied orientation of studies;
- appropriate didactic and scientifically-methodical providing of educational process and its psychological and pedagogical grounds;
- opening of creative potential of students and teachers in accordance with their inclinations, needs and capabilities.

Development of higher school can be carried out only by means of innovations. Innovative activity is understood as development, search, mastering and introducing innovations.

From all variety of innovative directions the most important factor in achievement high-quality of new level of education is using of modern pedagogical educational technologies. Modern educational technologies, integrated in the real educational process, allow:

- to achieve the aims, put by the program and the standards of higher education;
- to adopt the basic directions of pedagogical strategy: humanizing of education and personality oriented approach in studies;
- to develop students' intellect and independence;
- to focus on development of creative activity of personality;
- to be tolerant in mutual relations between a teacher and a student.

Forming of national humanitarian-technical elite is the task that the National technical university "The Kharkiv polytechnic institute" puts before itself, impossible:

- ❖ without solution of a problem of student's studying independently to acquire knowledge, information and to use them in the activity;
- ❖ without creation of motivation to the long life studying, because swift development of civilization needs personality's high intellectual and social mobility, activity and responsibility;

❖ without continuous updating of not only productive but also social technologies in all spheres of vital functions of society.

In connection with the above-mentioned the university works on the problem of upgrading of pedagogical trade of the scientifically-pedagogical workers.

With the purpose of rendering methodical help to the scientifically-pedagogical workers in embodiment of modern pedagogical technologies the rector ordered to appoint consultants from a number the leading teachers of department of pedagogic and psychology of management, and also taking into account large experience of application of concrete pedagogical technologies to appoint consultants from a number the teachers of university, which constantly use these directions:

- playing planning;
- modern technologies of creation and using of distance courses;
- personality oriented educational technologies;
- using technologies of Web 2.0;
- using innovative technologies in teaching of students of manager's specialties;
- professional skills of teacher of physical education.

For activation, generalization and distribution of up-to-date experience of pedagogical activity in NTU "KhPI" **The center of modern pedagogical technologies** was established, the main task of which is providing:

- integrity of educational process;
- ability of scientifically-pedagogical workers to form the national humanitarian-technical elite;
- unity of the world view, fundamental, special, social humanitarian and administrative preparation;
- forming the students' system type of thought and its innovative character;
- high social and professional mobility of a person and his readiness to the changes.

In the university the certain system of work of methodical department is determined in the questions of studies and rendering comprehensive methodical and organizational help to the faculties and the scientifically-pedagogical workers for the facilitation of introduction of new pedagogical technologies.

Large work in propagation up-to-date experience of using modern pedagogical technologies is conducted by **the methodical commissions of faculties**, which determine the best teachers, who apply modern pedagogical technologies, and organize the studies of teachers during methodical training meetings, methodical seminars, classes of masters, studies adapted to the features of faculty.

The constantly working system of improving pedagogical skills is organized in the university. In the methodical department of university 14 scientifically-methodical seminars work on permanent basis, where annually over 450 teachers and graduate students of NTU "KhPI" and other Kharkiv Institutes have the opportunity to perfect their pedagogical skills.

Holding annual schools-seminars has already become traditional, the main aim of which is practical studying of scientifically-pedagogical workers the modern approaches in education and development of personality, new directions of organization an educational process and modern educational technologies which are developed and adopted in NTU "KhPI" by leading scientifically-pedagogical workers.

Just the same International school-seminar "Modern pedagogical technologies in education" passed in NTU "KhPI" on February, 1-3, 2011 and became already ninth.

The head of the university NTU "KhPI", laureate of the State reward of Ukraine, honored worker of science and engineering in Ukraine, deserved worker of higher school of Ukraine, doctor of engineering sciences, professor Tovazhnanskiy L.L. directed the work of the school-seminar.

On the plenary meeting by means of Internet technologies the participants of the school-seminar were congratulated by the Director of Institute of pedagogical education and education of adults, academician of The National Academy of Pedagogical Science of Ukraine, doctor of pedagogical sciences, professor Zyazun I.A. In his report he underlined that NTU "KhPI" was one of leaders in using modern pedagogical technologies in Ukraine, and he wished successful work in all pedagogical workshops, presentations, which are planned.

***623 members took part in the three-day school-seminar: they are representatives of 24 institutes, 7 technical colleges, 7 professional technical schools, 5 Kharkiv schools, and also representatives of higher educational establishments from 16 cities of Ukraine.***

The feature of the ninth school-seminar was that it became international. During holding the methodical seminars, videoconferences the representatives from Belarus, Kazakhstan, Germany, Russia and United States were attracted to work in pedagogical workshops. They had the opportunity to participate actively in process: divided by experience, give the comments, put questions and get answers on them.

During the work the participants of the school-seminar had the opportunity to see only part of pedagogical technologies which are used in NTU "KhPI". These were not "model performances", but the technologies which are used by our scientifically-pedagogical workers in an educational process. Some of them were created by us (playing projecting), and some of them were just successfully adopted in our university (distance studies, using of technologies of Web 2.0).

The specific forms of work of technical higher educational establishments and problems which need co-ordination of actions of teachers were examined in work of the school-seminar. The school-seminar conducted in form of pedagogical workshops, trainings, business games, discussions, constituent lectures, presentations.

Opening the school-seminar the head of the university NTU "KhPI" professor Tovazhnanskiy L.L. underlined that introduction of innovative methods of studies in the university was conducted in a few directions.

The first among such directions is **democratization of educational process**, which means a concession to the students of a "voting right" in the questions of determination of aims of education, its maintenance and methods of studies, which are used. Holding wide sociological, psychological and other researches bears in mind with the purpose of exposure the real necessities of students, their attitudes toward what for and how they are taught, their educational motivation and the maximally possible use of results of such researches in organization of educational process, making alteration to this organization in accordance with the results of researches and inspections. A very large role in this democratization belongs to the institutions of student self-government, because their representatives directly participate in realization of the adopted researches, in clearing up of students' relations to teaching separate disciplines, work of separate teachers and so on.

The second direction is **the gradual converting of process of studying into self-teaching**, when a teacher creates such conditions when a student must get knowledge mainly due to creative independent work, independently searching for necessary information and creatively working over it in order to do necessary conclusions and get the results conditioned

to the educational tasks. Surely, it needs studies materials and literature for independent work, possibilities of the permanent using information technologies, especially the Internet. The development and providing such materials and possibilities must present the most considerable part of methodical work of teachers.

The third direction of introduction innovative methods of teaching in an educational process is **the gradual changing of the role of a teacher in an educational process**.

From a man who gives knowledge and checks up their mastering by students, a teacher must grow into the organizer of their work of an independent search, creation and adapting of this knowledge. His main function is to give the students directions and guidelines, and also necessary help in self-education, to help them in development of creative capabilities. Such function provides for attraction students by a teacher to implementation of the educational-experienced and research work becomes a direct official duty, without implementation of which a teacher can not be considered one, who answers professional requirements to him.

**"Long-life education" is the main principle of forming of specialists of new high-quality level.**

Pedagogical workshop "Personality oriented educational technology. Awakening of will" was devoted to the problems of using new personality oriented pedagogical technologies, adequate to the new aims of education, and to mastering of these technologies.

Uniqueness of new technology - in strong, philosophical and methodological approach, aimed at opening of potential of everybody. It is directed to opening of potential of everybody and based on integration of the psychological and pedagogical approaches to personality, working with the barriers of studies, on new principles of organization of educational process, creation horizontally and vertically integrated programs, teaching of disciplines by blocks.

As a result of introduction of such technology there can be realized a row of high-quality achievements which meet the necessities of development of society: awakening of will (motivation to the studies); development of capacity for independent studies; development of "live" thought, creative intuition; development of independent judgment; development of creative capabilities; self-realization, actualization.

Everything we told about can be realized on condition of introduction of fourth direction - **individualization of educational process**.

Quality of education can be increased only at those conditions, when a teacher take into account personality of every student, his psychical cognitive features and features of perception, interests, necessities, aims and others like that. Teachers must study the features of the students and adjust teaching to them. Only at such condition it is possible to expose and use psychological reserves of students for educational aims, to convert them from the passive objects of pedagogical efforts for active subjects - participants of educational process.

One of the technologies which assist achievement of this purpose is training "The Pedagogical Contact in the Context of Modern Humanism Psychology". Actuality of theme is related to the psychological problems of forming pedagogical contact at higher school. Essence and nature of person-centered approach is in forming of contact in humanistic psychology. Emotional and interactive elements of pedagogical contact. Psychological problems of forming person-centered contact between a teacher and a student.

***A pedagogical contact within the framework of this approach has next descriptions:*** the individual, differentiated approach of a teacher to the students;

- main attention of teacher is given to feeling and experiencing of students;
- a teacher often enters into an open dialog with students;

- a collaboration with students at planning of work;
- active participation of students in attestation of their knowledge, creative approach to an educational process.

A pedagogical contact, which is centered on a student, forms an educational active educational atmosphere, initiates the common collaboration of students between them and with a teacher, develops initiative, creativity and capabilities of students, causes feeling of pleasure from an educational process.

Teacher must have three main characteristics in co-operating with students:

- ❖ frankness, congruence, sincerity in an exchange on a role conduct;
- ❖ pedagogical optimism, an internal confidence of teacher in the students' talents;
- ❖ understanding of the internal world, position and experiencing of students.

Master-class consists of two parts:

- Informative part is devoted to the psychological aspects and specific of pedagogical contact.
- Practical part passed in the format of group meeting, where participants had the opportunity on their own experience to learn to establish psychological contact.

Important direction of introduction of modern pedagogical technologies is direction which in pedagogy got the name "**co-operative studies**".

It is based at joint work of students above the educational tasks of problem character (for example, in completion of educational projects), when a decision could be reached only by combination of efforts, in other words co-operation of students which arrive at a general purpose collective efforts. Co-operative studies assist the association of knowledge, skills and abilities of students, their capabilities and possibilities, that creates condition for mutual studying. Students begin to study from each other so, that potentials all "appropriated" to each of them, as a result, general progress in studies is considerably accelerated. Co-operative studies require such organization of educational process, at which students constantly work in pairs and small groups, reporting about independent collective job performances to both the teacher and all academic group.

Employers mark the high personal interest in development of professional and business skills of students. One of the most essential skills of future specialists for successful realization of the professional competences is ability to realize group projects, to work in a command, to build communications with the colleagues. Development of this skill pulls out new requirements to the methods of teaching, which must include using of group tasks.

This direction was presented by training of pedagogical mastery "**Using of group work for development of professional and business skills**".

Important direction of introduction of innovative technologies is intensification of educational process and maximal activation of students in it.

**For this purpose in our university many methods and approaches are used, among which it costs to name:**

1. Using of the problem approach to studies which requires such organization of educational tasks for students, that their fulfillment stipulated not simple reproduction the got knowledge, but their creative using for the decision of new, non-standard tasks in new, non-standard situations. In this case, executing educational tasks, students open new knowledge independently, get new skills and abilities (in particular, ability to function, to work and to make decision in non-standard situations), that it is very important for effective future professional activity;

2. Changing practical employments, seminars into the so-called "workshops", in other words such types of employments, where students during discussions settle the meaningful problems of specialty on the basis of their own independent works, but not simply "polled" on material.

3. Wide introduction of presentations in practical studies and seminars, independently prepared by students after the tasks of a teacher;

4. Wide introduction of role and business games;

5. Wide introduction of cases (case-studies);

6. Including to the educational process completion of individual and group educational project by the students, which represent practice of work on specialty;

7. Practice of carrying out classes by the representatives of production on practical studies, seminars;

8. Wide using of multimedia technologies in lectures and practical studies, seminars, electronic and different types of supporting compendia of lectures, giving to the students educational information on electronic transmitters, Internet-search of students and teachers for the aims of educational process and others like that.

With the purpose of demonstration some pedagogical technologies which are used in the university during the school-seminar a creative workshop was held **"The Development of Creative Capabilities of Students of Technical Institutes"**.

Work of workshop is appointed to the exchange of development creative capabilities of students of higher technical establishments. Participants became acquainted with organization of work in such directions: innovative activity of students in an intercourse format, creative constituent of the educational planning in the playing regime. There were lectures-presentations about the indicated directions, demonstration of movie about the playing planning, playing lesson with the participants of school-seminar, lectures and exchanging experience.

Considerable increase of volumes of information and acceleration of cycle of its renewal in the limited term of studies which requires intensification of educational-cognitive activity of students due to new information technologies and effective use of their possibilities also requires application of new pedagogical technologies. The evident example of such technology is a creative workshop: **"Practical application of computer and multimedia technologies during realization of lectures on professional disciplines"** (leader - prof. Klimenko B.V.). During its realization participants examined the results of six-year-old experience of system application of informative-computer and multimedia technologies which allow substantially to intensify an educational process.

The leader of master class showed the methods of creation lecture presentations worked out by him in the format of PPT, electronic conspectus and distributing material in PDF format, making illustrations, application of animation effects and building of video clips in the files of presentations, and also divided his own experience in application of testing facilities during realization of current and final control.

Considerable attention was paid to forming students' experience of communicative skills not only from the point of view of forming capabilities to pass information, ideas, problems and decision to the specialists, but also from the point of view of application of official international (English-language) electric engineering terminology. The leader of master class showed terminology train aids with a vulture MES of Ukraine, due to which students get access to official terminology of the International electrical engineering commission, which is acknowledged in the whole world and is basis of all international electrical engineering standards.

**One of the pedagogic technologies which were shown during the school-seminar was training "Methods of active socialpsychological studies : Method of cases. Training of abilities is "equal to equal". Psychological bases of conduct a business game.**

During work of training the algorithms of application of modern methods of active socialpsychological studies were analyzed. The practical questions of forming cases were shown on the example of work of manager, a worker of middle link in industry of interpersonality co-operation of workers in organization, the principles of realization of training "equal to equal" were given, its features are described comparatively with other types of trainings, methods of realization, and also psychological conformities, which operate in a group of students during realization of business games.

Development of skills of evaluation the level of teaching mastery through a reflection, and also skills of receipt and getting of structural feed-back; an exchange of experience in upgrading of teaching through a reflection and studies from colleagues conducted in the process of training **"Improvement of teaching through a reflection and studies from colleagues"** professor Reshetnyak O. V. Under her guidance passed another master-class "Internationalization of education through the use of possibilities of videoconference technologies", during which on the real experience of the using of videoconferences in an educational process and in co-operating with international partners from Magdeburg university (Germany) there were shown possibilities of internationalization of educational process and value of such approach.

But it should be mentioned that success of introduction the adopted directions depends on informatization of educational process which must be saturated enough by a computer technique, that every student had the opportunity to search information in the Internet, to get over the Internet a task from a teacher and his comments in relation to their implementation, to get necessary consultations, to share information with other students and to get all necessary reports in relation to an educational process, to execute over the Internet general educational projects with the students of our institute, other institutes and even with students from other cities and countries. Our university pay much attention to working in this direction.

Using informatively-communicative technologies, including **distance education**, for preparation of modern specialists is a world educational tendency. Using information technologies in an educational process, their development has already been for many years one of priority directions of development of education in NTU "KhPI". The university works above creation and development of the system of the distance education. In the methodical department systematic preparation of teachers for development of the distance courses is conducted.

The developers are the leading teachers of many departments, who got necessary methodical materials. On this stage the **distance studies** are priority scientific and methodical work assignment. Permanent development of correspondence form of studies (also with students with the special needs) is provided with the use of the distance technologies, the list of professions, where such studies are conducted, is broaden. Work of the distance preparatory courses activates with the purpose of extending using electronic studies for bringing in entrants and additional preparation of students of the first course. The practical participating of the university is grown in European educational e-space, and also a collaboration with the Ukrainian and foreign partners develops in the general use of all possibilities of the distance education.

On the base of the methodical department of the university seminars and schools-workshops are constantly conducted for the managers of the distance studies and teachers in relation to work with the basic instruments of electronic studies, annually a competition on the best developer and a teacher of the distance courses is held. From 2003 years 404 distance courses from different disciplines are developed in the university. Over 100 distance courses are developing now, most of them are intended for the studying of technical disciplines.

The developments of our university in creation the system of the distance studies are used by leading educational establishments of Ukraine. Over 3000 teachers of our university, other Kharkiv and Ukrainian institutes got through the courses for heightening qualification.

The distance studies are distinguished from the traditional forms of studies by such features:

- flexibility is possibility to study in comfortable time, in a comfortable place;
- possibility to study without tearing away from labour activity;
- no limits in time of studies;
- the technologicalness is the using in educational space the modern achievements of information technologies;
- economical efficiency of studies;
- possibility to get education regardless of habitat, state of health, material providing.

The pedagogical workshop "**The Problem and Progress of the Distance Studies**" was devoted to the improvement of pedagogical skills of teachers.

Today the process of development the distance studies continue: permanent development of informatively-communication technologies, services of Web 2.0 goes on, it makes changes in the distance studies, makes technologies more accessible for a teacher, improves an educational process and makes it more effective.

The distance studies are widely used in the daily form of studies. How it is done in the NTU "KhPI" was showed in the pedagogical workshop by prof. Kuharenko V.M. The offered distance course, dedicated to strategy of development of the distance studies, was useful for teachers and research workers of universities, and also for the specialists of corporations. In our opinion, it helps strengthening of connections between the university and industry and business.

The pedagogical workshop "**The Internet technologies in the educational process of higher school in Ukraine**" was devoted to the effective using of technologies of Web 2.0 in studies, and also distance studies over the Internet and mixed forms of studies (blended learning).

The perspectives of the using the IT in education connects with development of the Internet as a global interactive educational environment. Undoubtedly, their technological potential is enormous. They allow to pass to realization of valuable scientific or technological experiments, computer design of objects and systems. The aspiring for the integration in the



field of education, as one of tendencies, dictates the necessity of forming the united educational space.

Our university is well-known in our country in participating in many international programs and projects in the field of development and using of innovative approaches in education, introduction in the educational process of high-tech, network the Internet and forms of the distance studies, our university is one of leaders among the universities of Ukraine in this sphere.

33 international projects, which connected with the using of high-tech, with the general amount of financing about 31 million dollars work in the university.

The international activity of the university and leading place among the Ukrainian universities in development of internet technologies and distance education assisted realization of this workshop, devoted to using of Internet technologies in education, including Read/Write web and also skype technologies.

Using for the studies possibilities of Web 2.0, in opinion of the teacher from Canada Stephen Douns (one of developers of Web 2.0 in education, which entered a term), mean passing to such model, when a student becomes not only more autonomous from the point of view of control after an educational process but also more active in creation of educational information and co-operating with other participants of studies, comes forward in the center of pedagogical design.

Finally, the last direction is **an improvement of the control (including test control) of knowledge, skills and abilities.**

The existed in the university control system requires not simply reproduction of the got knowledge. The most important is that how a student is able to use them for the decision of problem (and first of all practical) tasks. A considerable place is occupied by the electronic tests, which substantially increase objectivity, operationability and mass character of realization of control from disciplines which are laid out.

The modern level of organization of educational process pulls out new system requirements to control of knowledge. Beside the traditional requirements of objectivity, comprehensiveness, systematic character, individual character at the same time an operationability, flexibility, possibility of rapid account and analysis of results become important. Taking it into account the computer testing becomes the perspective form of control. It provides the exception of subjective estimation of teacher, rapid verification and receipt of results for plenty of students, adaptation to maintenance of education and different levels of preparedness of students.

The pedagogical workshop "**Computer Testing in Physics in the Variant System of Education**" was devoted to the problems of using the computer testing in the educational process.

The purpose of workshop was an acquaintance of teachers with the system of the computer testing worked out and experimentally approved in the educational process of department of general and experimental physics, important characteristics of which is adaptiveness, modularity and multilevel, that allows to develop it in the process of exploitation, to use as a mean of studies and self-training, to carry out control of knowledge of students with its help.

The important factor of distribution of modern information technologies are libraries. Theoretical knowledge and experience of research workers, specialists of pedagogic are concentrated here. A library, keeping the traditional functions, becomes an universal informative center. The main task of scientifically-pedagogical workers is to be able to use this riches. The presentation: "**Pedagogical technologies: informative resources**" was devoted to possibilities of scientific and technical library, to the algorithms how to find these knowledge there.

A library of the NTU "KhPI" is the member of Association of modern informatively-library technologies, the member of Kharkiv library society. It gives access to the wide circle of users to the documents (1 493 154 units) and own informative resources (visits of Web-site over 52 000 for a year).

The library of the NTU "KhPI" serves not only scientifically-pedagogical workers and students of the university but also other employees of scientific organizations, educational establishments and industrial enterprises.

The libraries of higher educational establishments must unite their efforts in forming united informative resource of region and in making conditions for their maximally effective using. A research worker and a student of any institute must have an unimpeded access both to informative and document resources of any library of Kharkiv institutes on the basis of only reader ticket. This will be the state approach to using money on forming of such resource, and to its effective using.

We consider that every graduating student of institute should get in the university a reader ticket with status graduating "student", in fact his studies are not completed with a receipt the diploma.

Examples given in the article does not dip out all spectrum of works which are conducted in direction of application of new pedagogical technologies in our university. Certainly, there are quite a bit positive changes, but many untapped backlogs exist. Our task consists in using the experience that has already turned out, and teaching potential which is owned by the university today.

Ю.І. Панфілов

**ДЕЯКІ НАПРЯМИ ДОСЯГНЕННЯ ЯКІСНО НОВОГО РІВНЯ ОСВІТИ  
(на досвіді використання сучасних педагогічних освітніх технологій у  
Національному технічному університеті "Харківський політехнічний інститут")**

Вихід на новий якісний рівень розвитку суспільства, кардинальні зміни цілей і характеру суспільного виробництва спричиняють зміну вимог до професіоналізму й особистісних якостей фахівців.

Значне зростання обсягів інформації і прискорення циклу її відновлення при обмеженому терміні навчання, розвиток інформаційно-комунікативних технологій потребують інтенсифікації навчально-пізнавальної діяльності студентів завдяки впровадженню сучасних педагогічних технологій.

У статті розглядається досвід НТУ "ХПІ" щодо впровадження нового змісту, методів навчання, посилення прикладної спрямованості, відповідного дидактичного, науково-методичного та психолого-педагогічного забезпечення навчального процесу.

Ю.И. Панфилов

**НЕКОТОРЫЕ НАПРАВЛЕНИЯ ДОСТИЖЕНИЯ КАЧЕСТВЕННО  
НОВОГО УРОВНЯ ОБРАЗОВАНИЯ (на опыте использования современных  
педагогических образовательных технологий в Национальном техническом  
университете "Харьковский политехнический институт")**

Выход на новый качественный уровень развития общества, кардинальные изменения целей и характера общественного производства приводят к изменению требований к профессионализму и личностным качествам специалистов.

Значительный рост объемов информации и ускорение цикла ее обновления при ограниченном времени обучения, развитие информационно-коммуникативных технологий требуют интенсификации учебно-познавательной деятельности студентов благодаря внедрению современных педагогических технологий.

В статье рассматривается опыт НТУ "ХПИ" относительно внедрения нового содержания, методов обучения, усиления прикладной направленности, соответствующего дидактического, научно-методического и психолого-педагогического обеспечения учебного процесса.

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