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Psychological Potentials of Modern ICT as A Tool for Ensuring Students' Self-Fulfillment and Personal Well-Being in University Education

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ABSTRACT

The objective of this study was to present psychological possibilities of information-communication technologies that activate the different ways of students' self-fulfillment in the learning process. The results of students' interviews about the opportunities and conditions for self-fulfillment in university education are presented. Based on the thesaurus-analysis, authors reveal the semantic indicators of self-fulfillment as subjective-significant factors of personal well-being. Summarizing the obtained data, the authors disclosed psychological resources of modern information technologies through a dual-circuit model of ICT potentials, which activate these factors in the process of studying at a university. The first contour of actual opportunities ICT consists of potentials such as: descriptive, representative, exhibiting, navigation-orientation, search-heuristic, imprinting, adaptive, interactive, structural-organizational, control-evaluative, logistic, diversification, catalyzing, facilitating, and innovative. The second contour of latent potentials ICT contains more deep resources and includes the following potentials: reflexive, constructive-modeling, personalizing, activating, limitlessness, temporal, integrating, motivating, exteriorizing, and amplifying. Together, both contours of potentials form the holistic informational-favorable environment for self-fulfillments of students in the learning process.

Key words: *Personal Well-Being, Students' Self-Fulfillment, Information Technologies, Thesaurus Analysis, Psychological Potentials of ICT.*

INTRODUCTION

Broad and all-encompassing spreading of modern information-communication technologies (ICT) has become one of the leading trends of higher education development [1]. Most teachers, professors and scientists understand that the combination of digital technologies and resources gives more opportunities for expanding horizons and improving the quality of education, teaching and training than all the previous education technologies from a blackboard to the TV [2, 3].

In our opinion, the main task of applying information technologies is to provide students' personal well-being during university training [4]. The solution of this task is also being the basis for higher school informatization. There is no doubt that we can assess the effectiveness of university education in terms of the scale and depth of students' realization of their personal strengths and their concern and involvement in the process of training, apart from formal indices of academic performance and attendance [5]. Therefore, modern ICT can have a significant impact

both on improving the quality of higher education, and on expanding opportunities for personalization of learning and creating new conditions for revealing psychological abilities and resources of each student [6].

In the literature, there are many approaches and definitions of the concept of the personal well-being [7 – 11]. We view this phenomenon as a derivative and consequence of the process of comprehensive self-fulfillment [12, 13]. Such approach makes it possible to explain personal well-being as a dynamic psychological state associated with a person's successful decision of important existential tasks of own development and improvement as fully functioning personality [14].

Psychological and educational opportunities of ICT are opened when there is a clear understanding of the model of ICT development in the learning process. Such a model cannot be a miniature impression of some three-dimensional object but rather introduce the basic trends of ICT development to ensure a scaffold or framework. Such structure indicates the interrelationship of different processes within a whole system and helps understanding by university administrators and educational organizers. According to UNESCO programs, two models of introducing ICT in the educational process are proposed.

The first model implies the development of ICT as a continuum along which an educational system or a separate university can build the approach that is associated to the application of ICT for specific tasks of their own development. This model is treated as a continuum of approaches to ICT development [15].

The second model depicts different stages in the way that those who are most involved in the application of ICT in universities – professors and students – discover, learn about, understand, and specialize in the use of ICT tools. This second model is treated as stages of teaching and learning with and through ICT [15].

Both of these models together provide the basis for building an ICT curriculum as well as for the professional growth of teachers and professors [15].

We believe that both models of ICT development in higher education have perspectives for rooting. The main thing, in our opinion, is that in the transition to these models, the use of ICT would not become the ultimate goal, but would serve as a powerful stimulus and psychological tool for improving the quality of education and the development of the potential forces of students' personalities [16, 17].

Despite the well-known powerful capabilities of ICT, humanitarian influences of ICT in learning are still not sufficiently studied in the literature. The layer of socializing and psychological resources of ICT as a means for building whole and indiscrete educational process remains in the shadow [18].

Turning to new types of information technology in education, it should always be remembered that the learning possibilities of modern ICT like any other learning tools are fully revealed and carried out when they serve as the organic tool for developing personal resources and possibilities of students [19]. These technologies themselves are not universal means of solving all problems in education, and there are specific difficulties related to their implementation in the higher school [20].

Specialists note that ubiquitous and uncontrolled spread of modern ICT may cause various risks. Many of these risks are caused by the mechanical transfer of ICT into the learning practice without the necessary adaptation, on the one hand, and without a philosophical and methodological rethinking of the essence and logic of learning, on the other hand [21]. The point is that if modern ICT is used in education within the framework of the traditional dominant paradigm of explanatory-illustrative learning, all the flaws of this paradigm will increase manifold, and the education process will be truncated to information loading of consciousness without development of thought structures and creative activity of the personality [22]. Besides, there is also a danger of depreciating the teacher's activity, whose work can be reduced to banal maintenance of modern ICT during classes [18].

One of the key problems of traditional teaching is that the teacher needs to form a non-stop educational process in discrete and time-limited classes and he must fully involve the personality of a student who would be able to find the best way of professional and life self-actualization [17].

Various innovations and educational reforms sought to expand didactic space and time in order to release the learning process from the narrow boundaries of classes into the sphere of self-sustained work of students for better organization of their academic development outside the curriculum. However, these attempts used to have very modest results [19].

Now we have a real opportunity to solve this problem by attracting a new generation of ICT and online-learning based on the use of Internet network resources [23 – 27]. These technologies get a basis for various practices of media-education, which serve as a ground for the development of media-pedagogics and media-psychologicals [28, 29]. The main excellence of the newest ICT is that they open the opportunity to remotely manage the education

process, provide a student with all necessary teaching information, tutorials, communications and stimulate his high personal involvement and activity of self-study [3, 30].

In the cycle of the researches, we were based on the supposition that informatization of education should provide opportunities and conditions for subjectively significant self-development of students in the chosen profession, society, culture and life that awaits them [5]. It is obvious that an effective university helps students to embark on such self-development through the realization in the learning process of their inner potential and personal strengths [31]. Students' self-fulfillment process is largely determined by educational practices aimed at the full development of the personality as the initial mission of the higher school [32]. Being the leading life desire in youth, the need for self-fulfillment is generated by a deeper and more fundamental process of personal self-understanding and self-identification in the surrounding world [12].

In this regard, the key tasks of applying ICT in the educational process should be the creation of the conditions on the basis of these technologies for the versatile self-fulfillment of the students in the educational university environment. This goal stems from the very structure and purpose of higher education as a sphere of complete socialization and personal development as well as developing competent professionals and capable members of the society [3].

MATERIALS AND METHODS

The domain of our research was an information-educational environment of higher school as a space for students' self-fulfillment. The main problem of the research consisted in identifying of students' notions about their self-fulfillment possibilities and circumstances of personal well-being at the university education and identification of the psychological potentials of the latest ICT that create these circumstances in the learning process.

The main hypothesis of our research was that the process of self-fulfillment of students in the conditions of informatization of university education (apart from learning abilities and favorable learning conditions) depends on the arrangement of information and communication environment of learning. Besides, this environment should be focused on helping students design their professional and life way and provide them with all the necessary technologies and informational resources for self-development [33]. Obviously, the successful self-fulfillment of students in many ways now depends on the adequate application of diverse ICT that significantly expand the "corridor of opportunities" and which is in line with basic cultural norms and values transmitted in educational process [13].

The goal and stages of the research: In our view, the psychological task of studying the process of introducing modern ICT into the higher school system is to correctly connect the enormous potential of these technologies with the mechanisms and factors of students' self-fulfillment in the process of education. Therefore, the main goal of the study was to determine the psychological resources of modern ICT which provide various forms and ways of self-fulfillment of students.

To achieve this goal, we carried out research work, consisting of two stages.

The first stage has been devoted to revealing subjectively significant conditions of students' self-fulfillment and personal well-being in university training.

The second has involved the generalization of the obtained data about the conditions and forms of self-fulfillment manifestation of students and modeling appropriate psychological potentials of information technologies on this basis.

Participants of the research: Through a preliminary pilot survey, selective interviews, focus groups, the most relevant personal-significant conditions for students' self-fulfillment in the modern university emerged.

The research was conducted in 2016-2017 academic year, 502 students in higher training from four different Belgorod universities took part in it: technological university, humanitarian and economic universities, and the MIA higher school of low.

The method of thesaurus analysis and project modeling: The method of thesaurus analysis is based on the content-analysis of students' utterances with their subsequent sense-identification through focus-groups and semantic processing of data. In the process of a survey and interviewing of students, different opinions, assessments, and answers were made to the following questions: «What does the self-fulfillment in the studies and university life mean to you?», «Is it possible to achieve the self-fulfillment in the course of the studying?», «On what does students' self-fulfillment depend?», «What helps and what complicates your self-fulfillment at the university?»,

«What is the mission of the university in achieving students' self-fulfillment?», «What is demanded from yourselves for sustainable self-fulfillment?», etc.

Received responses and opinions were subjected to content analysis. On this basis, we received an array of thematic expressive statements that were centered on significant topics of student life. Then we applied the actual thesaurus processing of these topics. This procedure consisted in determining the personal values and contexts that hid behind these themes and appeared in it. During the focus-groups, we clarified the concepts and meanings on the basis of which students explained and revealed the content of the selected topics for themselves. As a result of such an analysis, we have omitted insubstantial and determine stable semantic clusters of indicators for students' self-fulfillment.

The method of project modeling consisted in systematization and construction of certain ICT resources, which most closely correlated with the received indicators of students' self-fulfillment in university education. As a result of this construction, a schematic model of psychological potentials of ICT was obtained as a program image of the competent application of ICT in the educational process.

RESULTS AND DISCUSSION

Subjective thesauri and semantic indicators of students' well-being and self-fulfillment in education

From the received mass of answers, units of information with personal-significant content were separated out, then summarized, systematized and grouped into specific thematic communities consisting of close in the direction, context and sense estimations, which are similar in their narrative and subject line. In this regard, we aimed to omit inessential formal, logical, stylistic, discursive, lexical, grammatical and other differences and nuances [34]. At a first approximation from the students' answers, total array nine semantic categories reflecting different aspects and self-fulfillment possibilities in the studying were separated out. More advanced semantic processing and the thesaurus analysis [35] of received answers categories consisted in their clusterization based on more versatile coupling of related lexical and thematic-expressive constructions. This allowed us enlarging and consolidating different answers categories into three overall semantic clusters, which served as a basis for the formulation of, accordingly, three significant conditions of students' self-fulfillment.

In the first group of answers connotations, estimations and statements reflecting respondents' immediate attitudes to the educational activity, the educational process at the university and also the importance of this activity in their life were included. Included in this group, students' estimations mainly raised the subject of the education process' subjective significance and high educational motivation on the whole.

In table 1. the most widespread semantic indicators of students' statements included in the first thesaurus cluster of their notions about subjective conditions in terms of the readiness to self-fulfillment in education are outlined in percentage terms (at the rate of 100 % mentions per every indicator).

Table 1. The structure of thesaurus of the readiness to self- realization in education

No	Semantic indicators	The frequency of usage (%)
1	Interest in education presence	69
2	Desire to study at the chosen university	65
3	Satisfaction by education	64
4	Personal significance and value of education	57
5	Absorption of studying and education in general	54
6	Desire to resemble teachers and to take a pattern by them	47
7	Tendency to know and master the future profession deeper	42
8	Continuous submergence into the education process	38
9	Other things	33

The list of indicators is shown in order of rating: upper points are occupied by those of them, which is more popular in the students' community, less popular ones are placed in lower rows. The above mentioned semantic connotations prevalence indicated the significance of student's personality implication and involvement in the educational process. We consolidate the opinions spectrum reflecting this circumstance of students' self- realization by the ego involvement in education process notion.

The second group of estimations is formed through the selection of students' statements and appraisals, in which the degree and completeness of their personality revealing in the course of the university education (inclinations, individual features, properties, abilities, experience, talents, etc.) were reflected.

In table 2, appropriate semantic indicators showing the importance of students' inner resources revealing as their self-fulfillment initial basis are reflected. These indicators were segregated into the independent cluster in students' estimations' general array.

As the table shows, reflecting the self-fulfillment contain acmeological sense ideas about the self-perfection possibilities, the personal and professional growth high parameters achievement dominated in the sense field of students' estimations.

Table 2. The structure of thesaurus of the self-fulfillment measures and actions

No	Semantic indicators	The frequency of usage (%)
1	Students' inner potential activation, their abilities and talents development	73
2	Intensive self-knowledge and perfection in the course of studying at the university	68
3	Increase of the university training subjective-significant utility	63
4	Approach to the goals, senses and dream achievement in the course of training at the university	60
5	Performing the duty of a social lift by the university	57
6	Stimulation of successes in studying, strengths activation in the course of training	55
7	Versatile self-manifestation and self-expression at the university	52
8	Support of personal efforts in the studying	47
9	Other things	35

In general terms, noted indicators determined the importance of conditions for students' abilities' realization in the course of the university training ensuring.

Into the third group structure estimations and opinions indicating the importance of constant contacts and social cooperation in the process of university education were combined. In students' opinion, it is impossible to realize oneself as the personality without intensive, friendly communication and joint activity.

The importance of the certain social atmosphere as a breeding ground, environment for the versatile self-knowledge and self-expression presence is noted in answers. The sphere of constant communication, collective life, social admission and proneness, collaboration and mutual help during the educational process play a role of such environment.

In table 3, students' answers' semantic indicators reflecting different modalities of the social support and facilitation for the full value self-fulfillment at the university significance are shown. These indicators composed the last thesaurus cluster of students' opinions about self-fulfillment possibilities at the university.

Table 3. The structure of thesaurus of self-fulfillment activators

No	Semantic indicators	The frequency of usage (%)
1	Presence of the intensive transpersonal interaction in the university life	74
2	Manifestation of mutual assistance and support in the student environment	70
3	Presence of the social proximity and solidarity in the student environment	67
4	Manifestation of concern and care from the university side	62
5	University help in the students' problems resolving	59
6	Presence of the confidence and respect atmosphere	56

7	Intensity and strength of friendly connections	55
8	Real functioning of student collectives in the university life	44
9	Students' leisure and mode of life qualitative ensuring	42
10	Other things	34

In general, in our view, discovered student youth's subjectively significant notions about self- realization allow to single out appropriate problems of the university training. Firstly, it is building-up and development of students' universal active abilities; secondly, it is the productive activity, purposeful and sensible actions in the educational sphere stimulation; thirdly, it is ensuring of this activity realizing wide social context playing the role of the social filter.

Psychological potentials of applying ICT for students' self-fulfillment

Two contour model of ICT potentials

We consider the above-mentioned specifics of self-fulfillment as important for ICT use in educational process, as implementation of these technologies should be whole and ensure the real progress of the educational system to the design of an individual trajectory of university training. To solve this task successfully, we believe it is necessary to define and activate appropriate resources and potentials of ICT applying in higher school.

We have summed the current practices and approaches to modern ICT application in educational process and tried to catalogue and further classify ICT potentials from the viewpoint of influence on the most important structures of cognitive and learning activities of students. This classification is represented in the form of two-contour model schematically reflected in figure 1.

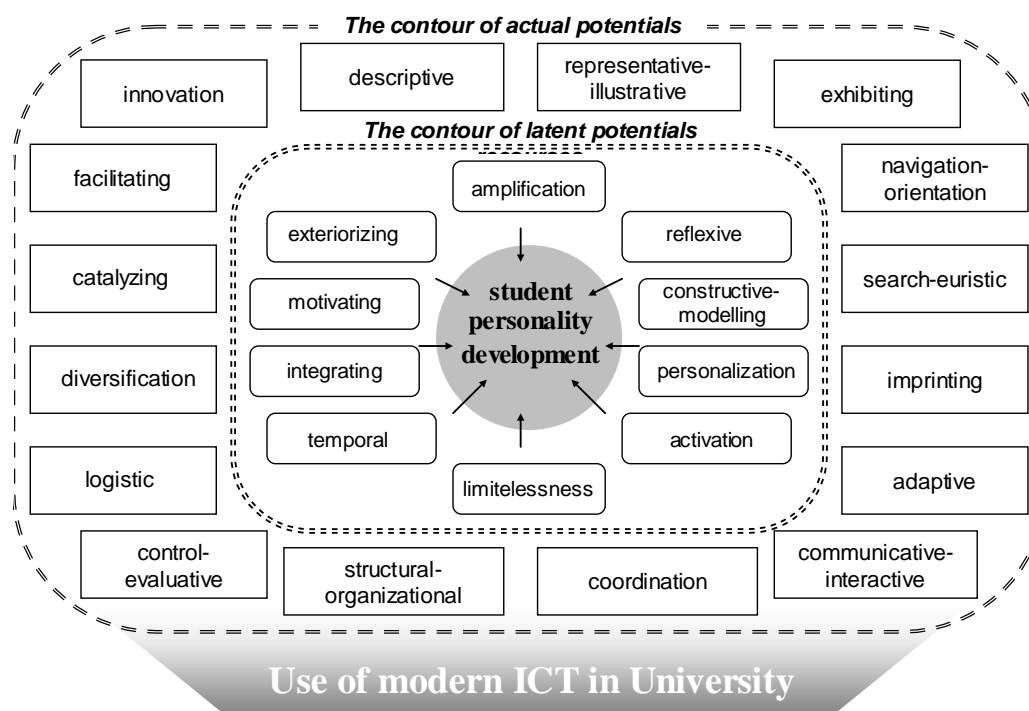


Figure 1. The model of psychological potentials ICT in personal-focused education

As shown in the figure 1, the possibilities of modern ICT in the development of students can be represented in the framework of two groups of psychological potentials – actual and latent. Consider briefly each of the contours of this model.

The contour of actual potentials of ICT

The first contour comprises actual potentials of modern ICT in education. This group of ICT resources has an evident, clear nature as if lying on the surface and is directly associated with the influence of these technologies on the increased efficiency of education process. These potentials can be directly involved and applied in the educational process for the purposes of higher quality of students' training and self-fulfillment. The actual contour involves the following ICT potentials.

The descriptive potential of modern ICT involves fuller, more capacious and various description of study material and content of learning to be acquired by students during the course of training. The application of ICT in education enables to refer to various forms of describing material, not only verbal, but often visual and dynamically unfolded.

Representative-illustrative potential is directly associated with the previous potential and means a way to represent the content of education as various illustrative-reproductive models, which can be based on modern ICT and significantly enrich and enlarge the possibilities of perception and acquisition of necessary knowledge by students reducing temporal and human expenses in education.

The exhibiting potential of modern ICT is closely associated with descriptive and representative resources and directly reflects the possibilities of whole, authentic representation of study material in the mode of expositional study provided by virtual reality, 3-D formats, and other latest information technologies.

The navigation-orientation potential of ICT implies full-sized orientation activity when students find optimal rout of access and trajectory of promotion in information flows and Internet networks for obtaining necessary knowledge and information for the education and cognition purposes.

Search-heuristic potential is derived from and associated with navigational potential and means the possibility to search for necessary information quickly and completely, to open new links and relationships in information space using ICT, and to transfer from the unknown to the known.

The imprinting potential of modern ICT means the possibility to produce a whole and bright information impact to elaborate clear and sustainable images and samples without preliminary training of students, when necessary information is imprinted ready-made with minimal efforts of learners.

Adaptive potential reflects greater flexibility and accommodative possibilities of modern ICT in adjusting and fitting their procedures, options, interface platforms etc. to various requests and educational needs of learners.

Communicative-interactive potential is one of the main resources of modern ICT, which implies large and manifold spectrum of contacts and interaction of teachers and learners in the information-educational environment in the framework of various formats and links, as well as provision of various levels and modes of interpersonal communication with educational-professional purposes.

Coordination potential means the possibility to manage and coordinate various information flows and evidence in the logic of educational access using modern ICT as well as to coordinate one's actions in information environment with the actions of other subjects within the framework of addressing educational tasks.

The structural-organizational potential of ICT is associated with the previous potential and implies the possibility to structure and organize various sketchy and fragmented information from different sources in the available educational construct to learn and use it during the professional training in the university.

The control-evaluative potential of modern ICT provides enlarged by parameters and continuous in time process of control and monitoring of performing educational-cognitive and other actions by learners as well as possibilities of their self-control and tracing the correct performance of educational tasks.

Logistic potential enables to provide learners with necessary information during educational process using modern ICT including the establishment of transmission channels, delivery, transportation, accumulation, distribution, sorting and representing necessary knowledge and all the information-education bulk of data in the framework of educational-professional tasks.

Diversification potential means providing necessary variety of ways, modes, methods, formats and mechanisms of receiving educational services by students using modern ICT in university training.

Catalyzing potential reflects general ability of modern ICT in education, which implies enhanced and more thorough education-information impact on students and acceleration of all the cycles and procedures of working with information.

The facilitating potential of modern ICT is a derivative of the above resources and implies large facilitation and discharge of teaching activities as well as learning activities of students using these technologies.

The innovative potential of modern ICT is expressed in the enrichment and updating of educational process by implementing new methods and ways to provide academic and professional training, involvement of students into scientific-innovation activity as well as the update of all the configuration and space of information interaction in the higher school.

The contour of latent potentials of ICT

The group of latent potentials of ICT in higher education formed the second contour of represented model (see Fig.1). These potentials are hidden and not obvious and require more subjects of educational activities to be carried out and thus raise the quality of training and possibilities of self-fulfillment in the university education. This contour has a more psychological content and includes the following ICT potentials.

Reflexive potential is based on providing students with a large spectrum of possible feedback about the course, quality, and efficiency of their promotion during the acquisition of study course and professional and scientific activities using modern ICT.

The constructive-modeling potential of modern ICT in education is expressed in larger possibilities to make them a basis for various information models, projects and other information constructs, which enable to represent the education content in a better way and help students to perform more efficiently various learning tasks and scientific work in the university.

Potential of personalization reflects the possibility to carry out personal approach in education based on modern ICT accounting for individual peculiarities of students, their abilities, preferences and expectations ; besides, the application of ICT in education opens a real perspective of creating individual trajectory of student's training and providing appropriate mode, format and methods of training.

Activating potential is directly associated with the previous resource and means possibility to raise the sides and aspects of students' education and activities in the university from the viewpoint of their training and self-fulfillment using ICT, possibility of their social self-affirmation and manifestation of individual qualities and abilities during university training.

The limitlessness potential of modern ICT in education expresses their unique ability to overcome space limitations to carry out educational process. The ICT opens a real possibility to expand educational space and make the learning process leave the discrete limits of auditory classes. Besides, the ICT enable the professors and students from various countries and continents to communicate and provides an open mode of training in globalization.

The temporal potential of applying ICT implies the change of temporal frames of educational process due to learning-communicative possibilities of new technologies of distant education ; these technologies release temporal resource for more thorough and continuous training of students.

Integrating potential means the possibility to use modern ICT for large involvement of learners with various educational needs including special needs students in the common space of professional university training.

Motivating potential means the enhancement of students' learning motivation by competent applying of modern ICT in education and revealing their actual and potential possibilities given above. The use of ICT in education increases the desire and enthusiasm of students who receive new perspectives and chances of self-fulfillment.

The exteriorizing potential of modern ICT in education implies the activation of internal resources and essential forces of learners, in possibility of their many-sided manifestation in education due to the technologies of independent constructing and projecting of the elements of their activity during university training.

The amplifying potential of applying ICT in the higher school implies general enhancement of the learning effect of university education due to the enlarged range of possibilities for students to successfully master the course of study and realize themselves.

SUMMARY

The presented set of relevant potentials concerning modern ICT is aimed at the provision of student's self-fulfillment, covering the main conditions their personal development in education shown by us. However, the successful deployment of such information technology functions as a training means is fully achieved if they are used in a personal measurement of a higher school education practice [4]. These technologies are not a panacea in education, and their implementation in a higher school is accompanied by its own difficulties. The personal measurement, in contrast to the other meanings of university training (professional, technological, methodical, information, scientific, etc.) is presented as a set of values and priorities for a personal development of students in the educational process [33]. It is aimed to provide a full self-determination and self-awareness, to expand the scope of student competencies, the development of their inner resources and a subject position in the course of a higher school training [5]. The widespread introduction of ICT within the personal measurement of education should contribute to self-fulfillment not only among students but also among university professors. The use of modern ICT can promote the cause of an information "clearing" and the release of psychological and pedagogical resources to

establish interpersonal pedagogical communication and the interaction between teachers and students as the subjects of educational process.

The proper use of modern ICT allows changing substantially the nature of academic work, to rebuild its contents, mode, rhythm, technique and philosophy in general. The prospect of some technical-teaching function transfer from teacher to information technology, namely, the function of information provision is offered for the first time in the history of education. The human resources released in such a way can be directed at the strengthening of an actual teaching and the educational role of a teacher.

CONCLUSION

Through our researches, we focused on the assumption that the process of ICT implementation in university education should provide human significant conditions for the development of the internal forces of students, their creative and intellectual resources. The results of our study convinced us that the students' self-fulfillment process in the university education represents; on the one hand, as the main growth line of the future specialist personality, one's successful development and self-determination. On the other hand, it acts as an internal indicator of university education effectiveness and a global marker of students' psychological well-being in the process of professional training.

The research results allow establishing that there are following important subjective-significant conditions of students' self-fulfillment in the university education. Firstly, it is ego involvement in education, submergence into the education process, steady identification with teachers, and tendency to holistic self-development in education. Secondly, it is the realization of abilities in education. Thirdly, it is students' social integration, the confidence and respect atmosphere.

The research revealed the need of use modern information technologies in university educational process as stimulators for students' self-fulfillment. The performed researches allowed formulating the personal-focused model of use of information technologies at the higher school, which is built from two contours of psychological potentials – actual and latent. In general, the represented model is arranged to provide the conditions of students' self-fulfillment through unfolding technical and psychological capabilities of information technologies. Obviously, the implementation of the new technologies in education does not guarantee that these conditions will be achieved automatically and needs large efforts and competence from the participants of educational process who consciously carry out partner subject-to-subject paradigm of training. In this case, the application of modern technologies can lead to the progress in training, and the described potentials of ICT can serve as humanitarian criteria of the efficiency of using latest technologies in the higher school.

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