

# Psychological and Didactic Resources of Use of Information Technologies as Tools of Students' Self-Fulfillment in University Training

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## Abstract

The level of development of modern information technologies requires their wider and more all-round application in the higher school, among other things, for solving a whole range of important psychological tasks, not only the issues of technical support of educational process. The given article argues that nowadays, these tasks mainly must focus on a problem of complete self-fulfillment of students in the process of university education. Described are the results of research of students' opinions about opportunities of their self-fulfillment in process of training. On a base on thesaurus-analysis authors reveal the subjective-significant components of students' self-fulfillment and also disclose the resources of information technologies that correspond to these components. A set of these resources is represented by two clusters – didactic and psychological. The didactic cluster consists of such resources as descriptive, representative, expounding, navigation-orientation, search-euristic etc. The cluster of psychological resources of information technologies consists of such resources as reflexive, constructive-modelling, the resource of personalization, activating, translimitive, temporal, inclusive etc. Together both clusters of resources form the holistic information environment of opportunities for students' self-fulfillment in the mode of "person-to-person" educational interaction.

**Keywords:** the higher school, information technologies, students' self-fulfillment, thesaurus research approach, self-

fulfillment semantic indicators, didactic and psychological resources of information technologies.

## INTRODUCTION

The dissemination of information-communication technologies (ICT) is one of the main trends of modern higher education development. Many pedagogues and higher school representatives 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 [1].

At present time the informatization of basic spheres of education including higher school has become very deep and wide-scale; therefore, there are many new issues of humanitarian nature about which prominent modern thinkers have long warned [2]. In our opinion, the issue of applying information technologies as ways to provide students' self-fulfillment during university training is important in the sphere of higher school informatization. It is no secret that we can judge about the efficiency of university education by the degree and completeness of realization of students' personal potential and their concern and involvement in the process of training, apart from formal indices of performance and attendance [3]. Therefore, modern information technologies can play a significant role in both improving the quality of training and providing larger possibilities of personification of

education and creating conditions for revealing creative abilities and resources of each student [4].

The analysis of special scientific literature shows that the use of new information technologies provides:

- the intensification of all the levels of educational and sociocultural process in the system of university training;
- multi-aspect development of a learner in the educational process;
- training university graduates to live in the information society;
- the fulfillment of social query defined by the processes of global informatization [5], [6], [7].

Meanwhile, humanitarian influences of ICT in education are still not sufficiently studied in the literature; the layer of socializing and didactic resources of ICT as tools for building whole and indiscrete educational process remains in the shadow.

The potential of new information and communication technologies in higher education opens basic possibilities:

- to improve the methodology and strategies of selecting the content of education and to introduce innovations in teaching traditional disciplines;
- to raise the efficiency of learning, its individualization and differentiation, to organize new forms of interaction during education, and to change the content and character of the activity of an educator and a learner;
- to improve the management of education process, its planning, organization, control, and modernization of mechanisms to manage education system [8], [9].

However, one must always remember that the educational 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 learners [4]. 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 [10]. Specialists note that these technologies may cause various risks. Most of these risks are related to mechanic carrying of the latest ICT in the educational practice without appropriate adaptation of these technologies on the one hand and philosophic-methodical correction of the educational process itself on the other hand [11]. The point is that if informatization of education will be conducted in the logics of the traditional dominating paradigm of explanatory-illustrative education, all costs of the latest one will lead to absurd, and the learning process will be reduced to the information firmware of consciousness without developing personal structures and creative thinking activity [12]. Besides,

there is a danger of devaluation of professor's activity whose role may be limited to simple maintenance of ICT [6].

One of the main challenges of the traditional education is that we have to create in discrete and limited in time intervals of classes the continuous didactic process covering the entire personality of a student who would be able to find the best way of professional and life self-actualization [13]. Many innovations and reforms tried to enlarge the didactic space and time and lead the education process out of the narrow limits of classes into the sphere of students' independent work to organize and manage their academic activity outside the curriculum. However, these attempts used to have quite poor results.

Now we have a real opportunity to solve this problem due to the development of the new generation of information and communication technologies of online study based on the use of Internet network resources. These technologies become a basis for various practices of mediaeducation, which serve as a ground for the development of mediapedagogics and mediadidactics. The main advantage of these technologies is that they enable to manage the education process remotely, provide a learner with necessary tutorials, information and communications, and stimulate his high personal involvement and activity of self-study.

Within the framework of the research carried out by us, we proceeded from the assumption that the informatization of training must provide conditions of the students' subjective-significant self-image in the future profession, the society and the forthcoming life projecting by them. It is obvious that the modern university should help the students to move to this image through the deployment in the course of training of his personal potential and essential forces. Students' self-realization process is largely determined by the university practice focus on the full value personality development as the most important problem and mission of the higher school. At the psychological level the self-realization need as the leading life intension in the student age is obliged by the birth to deeper and more generalized state expressed in the self-determination and self-identity tendency [14].

In this regard, the main tasks of applying information technologies in the process of university education should include the tasks of providing conditions for adequate self-fulfillment of student in the educational space of a university. This goal is derived from the very construction and destination of the higher school as the institute of socializing and developing personality as well as developing competent professionals and capable members of the society.

## MATERIALS AND METHODS

### The object and hypothesis of the research

*The object* of the research carried out by us was the higher school information-educational environment as the student

youth's self-fulfillment sphere. The main problem of the research consisted in identifying of students' notions about their self-realization possibilities and circumstances at the university and detection the leading resources of modern ICT that stimulate these circumstances.

Our study relies *on a hypothesis* that the process of students' self-fulfillment in the conditions of informatization of university training (apart from learning abilities and favorable learning conditions) depends on the arrangement of information and communication environment of learning. Besides, this environment should help students design their professional and life way and provide them with all the necessary technologies and informational resources for self-development. Obviously, successful self-fulfillment of students largely depends now on the existence of sustainable and adequate information technology "corridor of possibilities", which is in line with basic cultural norms and values transmitted in educational process [15].

### Scientific approach

The possibility to elaborate this hypothesis is provided by applying *sociocultural approach* to studying the issue of higher school informatization, which implies using information technologies as ways to reveal and realize the essential forces of students who absorb particular historical forms of sociocultural relationships [4]. Being a synthesis of knowledge, skills, aptitudes, talents etc. driven by interests, strivings, expectations and meanings, these essential forces are formed when an individual acquires the experience of culture through the mechanisms of desubjectivation and objectivation of this experience in social practice [3].

### The goal and stages of the research

In our opinion, a current task of studying the process of higher school informatization is to connect the potentials of applying modern information and communication technologies with the process of students' self-fulfillment in education. Therefore, the main *goal of the research* is to define the key resources of information and communication technologies that stimulate the manifestation of various forms and modalities of students' self-fulfillment.

To solve the set goal, we have conducted a research work consisting of two stages.

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

The second stage has involved the generalization of the obtained data about the signs and forms of manifestation of students' self-fulfillment and defined appropriate resources of information technologies.

### Materials and participants of the research

Through the tentative pilot questioning conducting, selective interviewing, carrying out focus groups the most important subjective-significant self-realization conditions of students in the modern university emerged.

The research was conducted in 2015-2016 academical year, 502 students in higher training from four different Belgorod universities took part in it: technological university, humanitarian and economic universities, the MIA higher school of law.

In the course of the questioning and interviewing students' different opinions, estimations and answers to following questions were ascertained: «What does the self-realization in the studies and university life mean to you?», «Is it possible to achieve the self-realization in the course of the studying?», «On what does students' self-realization depend?», «What promotes and what prevents your self-realization at the university?», «What is the role of the university in students' self-realization achievement?», «What is required from yourselves for the self-realization at the university?» etc.

Received answers and opinions undergo the primary content analysis. From the received information array units with the significant content were separated out, then generalized, systematized and grouped into certain 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. At a first approximation from the students' answers total array nine semantic categories reflecting different aspects and self-realization possibilities in the studying were separated out. More advanced semantic processing and *the thesaurus analysis* [16] of received answers categories consisted in their clusterization based on more versatile coupling of related lexical and thematic-expressive constructions. It allows to enlarge and consolidate different answers categories into three overall semantic clusters, which serve as a basis for the formulation of, accordingly, three significant conditions of students' self- fulfillment.

### FINDINGS AND DISCUSSION

#### Subjective thesauri and semantic indicators of self-fulfillment conditions in education

*In the first group* of answers connotations, estimations and statements reflecting respondents' immediate attitudes *to the educational activity*, the preparation 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 education high 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). 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.

**Table 1.**

The indicative structure of the readiness to self- fulfillment in education thesaurus

№	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 in studying and preparation 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 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- fulfillment 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 preparation (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 in education initial basis are reflected. These indicators were segregated into the independent cluster in students' estimations general array.

**Table 2.**

The indicative structure of the self-fulfillment measures and actions thesaurus

№	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

As the table shows, reflecting the self-fulfillment certain acmeological sense ideas about the self-perfection possibilities, the personal and professional growth high parameters achievement dominated in the sense field of students' estimations. In general terms, noted indicators determined the importance of conditions for students' *abilities realization* in the course of the university preparation ensuring.

Into the third group structure estimations and opinions indicating the importance of constant contacts and *social integration* in the course of the university education were united. In students' opinion, there 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 preparation process plays 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-realization 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 indicative structure of self- fulfillment activators thesaurus

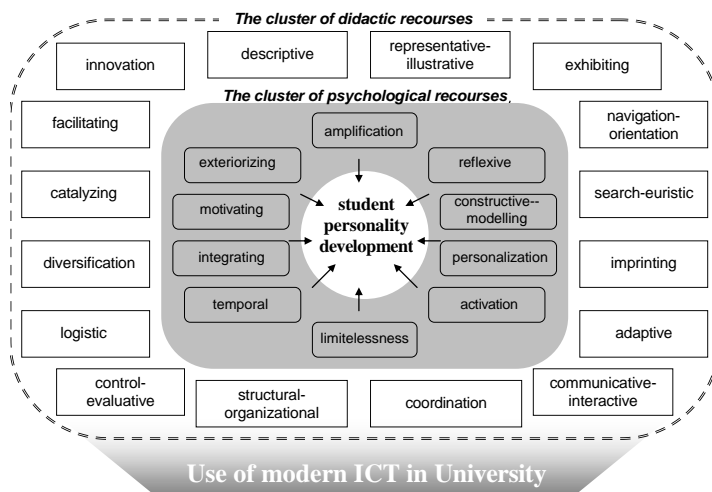
No	Semantic indicators	The frequency of usage (%)
1.	presence of the intensive transpersonal interaction in the university life	74
2.	manifestation of mutual assistance and support in the student environment	70
3.	presence of the social proximity and solidarity in the student environment	67
4.	manifestation 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- fulfillment 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 realization wide social context playing the role of the social filter and, at the same time, this activity catalyst.

At the same time, we consider these conditions as important to account for the implementation of information technologies in educational process, as this implementation should be whole and ensure that educational system really designs and carries out individual trajectory of education. To solve this task successfully, we consider it necessary to define and activate appropriate resources of applying information technologies in higher school.

We have summed the current practices and approaches to modern ICT use in educational process and tried to catalogue and further classify their resources 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-clusters model schematically reflected in the figure 1.



**Figure 1.** The model of ICT resources on providing students' self-fulfillment in university training

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 resources. – didactical and psychological. Consider briefly each of the contours of this model.

**The cluster of didactic resources of ICT**

The first cluster comprises *didactic resources* 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 resources can be directly involved and applied in the educational process for the purposes of higher quality of students' training and self-fulfillment. The didactical cluster involves the following ICT resources.

*The descriptive resource* of modern ICT involves fuller, more capacious and various description of study material and content of study to be acquired by students during preparation. 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 resource* is directly associated with the previous resource 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 material by students reducing temporal and human expenses in education.

*The exhibiting resource* 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 expository study provided by virtual reality, 3-D formats, and other latest information technologies.

*The navigation-orientation resource* of ICT implies full-sized orientation activity when students find optimal route 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-uristic resource* is derived from and associated with navigational resource 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 resource* 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 resource* 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 resource* is one of the main resources of modern ICT, which implies large and manifold spectrum of contacts and interaction of educated and educating subjects 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 resource* 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 resource* of ICT is associated with the previous resource 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 resource* 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 resource 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 resource means providing necessary variety of ways, modes, methods, formats and mechanisms of receiving educational services by students using modern ICT in university training.

*Catalyzing resource* 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 resource* 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 resource* 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 cluster of psychological resources of ICT**

The group of *psychological resources* of ICT in higher education is formed the second cluster of represented model (see Fig.1). These resources 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. The psychological contour consists of the following ICT resources.

*Reflexive resource* 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-modelling resource* 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.

*Resource 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 resource* 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 resource* 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 resource* 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 resource* 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 resource* 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 resource* 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 resource* 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.

## CONCLUSION

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 with education, which appears in students' interest to education presence, a desire to study at the chosen university, satisfaction by education, submergence into the education process, steady identification with teachers and masters of the profession, tendency to holistic self-development in education. Secondly, it is the realization of

abilities in education, which means students' personality potential development, their better self-knowledge in education possibility, the approach to their dreams embodiment, the abilities and talents revealing, the preparation orientation on the future success and students' professional growth, on their versatile self-manifestation in education, on their efforts in studying facilitation etc. Thirdly, it is students' social integration, that appears in a sense of community and mutual assistance in a student environment, the friendly connections presence, the confidence and respect atmosphere, the friendly connections significance and strength.

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 clusters of resources – didactical and psychological. In general, the represented model of applying information technologies in the higher school is arranged to provide the conditions of students' self-fulfillment through unfolding actual and potential capabilities of these 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-subject paradigm of training. In this case, the application of modern technologies can lead to the progress in training, and the described resources can be humanitarian criteria of the efficiency of using latest technologies in the higher school.

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