

Methodology of Students' Self-Educational Activity at a Technical University

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Abstract. There is considered the methodology of self-educational activity of students at technical universities. It is noted that in the context of transition to student-centered learning, the role of independent work of students is significantly increased. Various levels of independent work are described. The key role of the teacher in the successful organization of students' self-educational activities is emphasized. The reasons for the insufficient effectiveness of independent work at technical universities are considered. Organizational and methodological recommendations for strengthening self-educational activity are given.

Keywords: students' independent work, the role of the teacher, SIW effectiveness, creative tasks, SIW levels, monitoring.

Introduction

In present day conditions, higher education must ensure the training of competitive specialists who are able to adapt successfully to the requirements of the dynamically changing labor market and the social demand of society. Formation of creative activity and readiness of students for self-educational activity becomes an urgent task.

In the context of globalization and high dynamics of changes, knowledge is updated every few years. The growing amount of knowledge is in conflict with the limited possibility of its development. The physiological capabilities of a person in mastering knowledge cannot «keep up» with the avalanche-like growth of this knowledge. One of the ways to overcome this contradiction can be intensification of self-educational activity through the use of a highly effective system of organizing students' independent work [1]. A person's ability for self-educational activity comes to the fore, where independent work acts as a factor in competitiveness and self-development.

Self-education should become the need of every person, and first of all, of technical students. In the process of learning, students should not only gain knowledge, acquire skills and abilities to work with updated equipment and new technologies but also develop the need to learn throughout their lives. This will be facilitated primarily by independent work.

Statement of the problem

The problem of students' adaptation to the scientific and educational process at a technical university

in general and self-educational activity in particular is complex and requires controlled coordination in the actions of the teachers and students.

At present, organization of students' self-educational activity does not yet have a system-activity character. The importance of independent work and the quality of its organization at universities is a serious organizational and methodological problem. The choice of a self-educational route in the context of student-centered learning and knowledge control actualizes the importance of the teacher's role. The role of the teacher as a translator of knowledge is gradually being transformed and reduced to coordinating the educational efforts of students. There is a shift from the learning paradigm to the self-education paradigm [2].

Pedagogical community of Kazakhstan considers higher education as an integral part of the educational process, in which the teacher and student become equal participants in the cognitive process.

A distinctive feature of independent work at technical universities is its reproductive nature, insufficient focus on the research activity of students. The conceptual framework for independent work needs to be revised. Future graduates of a technical university should acquire not only the necessary knowledge, skills and abilities but also the ability to work professionally and competently in the chosen area, as well as the need to learn throughout their lives. These qualities are formed in the process of organizing students' self-educational activity, which is interpreted by researchers in different ways. Some of

them believe that self-education is an independent search for the necessary information, assimilation of new knowledge and independent solution of various educational problems [3]. The other ones understand self-educational activity as preparation for training sessions, analysis of lectures, development of course assignments (projects). In these types of student activities, the role of the teacher is mainly reduced to consultative and supervisory one. The main sign of independent work is not in the fact that students study without the direct participation and assistance of the teacher but that self-educational activity combines the functions of translating information into knowledge, skills and management functions.

Some researchers understand the organizational system of the student's educational activity on the instructions of the teacher under his scientific and methodological guidance as independent work.

Despite the existing differentiation of the essential content of independent work, it provides for high activity of students, and therefore, their personal orientation towards the development of self-educational activity culture.

In general, students' activity is a complex value that can be developed through purposeful interaction between a teacher and a student. With such interaction, the teacher needs to form favorable conditions in which students are able themselves to acquire new knowledge, to analyze, to prove and to be creative.

Results and discussion

Independent work is an important form of the educational process, it is the foundation for lifelong learning. A high level of the independence development will contribute to the process of constant self-educational activity and the formation of a competitive graduate. The effectiveness of self-educational activities depends largely on the planning of the SIW in the context of student-centered modular learning. A core element should be the methodological toolkit with a description of the technology for practical implementation of independent work and a program for the formation of an individual trajectory of self-educational activity within the framework of a training module.

For students in postgraduate education programs, the list of creative tasks focused on the successful acquisition of practical skills and solving inventive problems is extremely important. Creative tasks, if the student is motivated, will contribute to the formation of a self-educational route and its results.

An important role is played by diagnostic tools for evaluating the results of independent work. Such diagnostics is necessary to control the actual results of SIW, to assess the creative potential and innovative and inventive activities.

Transition to student-centered learning actualizes the role of the teacher in organizing students' independent work. Stimulation of professional and business communication in the performance of spe-

cific tasks contributes to the development of students' communicative competence and increases their responsibility for the formation of personal relationships in the team [4].

Solving profession-oriented tasks allows increasing professional orientation of the educational process and developing the information competence of the future specialist.

When using simulation modeling, the productive and transformative activity of students prevails, which removes the contradiction between the abstract nature of the training module and the real nature of professional activity, the systemic nature of the knowledge used and their belonging to different modules.

Working in small groups stimulates coordinated creative interaction between students, a relationship of mutual responsibility and cooperation.

Problem-based learning encourages students to acquire independently the knowledge needed to solve a specific problem. It involves different options: from presentation of the problem and its solution by the teacher himself to the independent solution of the problem by students under the guidance of the teacher.

Independent work of students should be of a systematic continuous nature, and organization of SIW should be combined with the methods of teaching and knowledge control used at the university and represent a single system for acquiring knowledge, skills and professional competencies. This actualizes the need to develop a set of organizational and methodological materials to improve the effectiveness of self-educational activities.

Students' independent work is still insufficiently studied and at the same time is of the greatest interest in the context of increasing the effectiveness of the educational process and the formation of personal qualities for lifelong education.

What are the reasons for the low effectiveness of SIW? Depending on the level of education (higher, postgraduate), it can be systematized into three groups, depending on the specifics of the educational program, the scientific and pedagogical activities of the teacher, and the scientific and educational activities of students [5].

At the level of specifics of educational programs:

- a unified approach to determining the volume of SIW without taking into account the features of general education, basic and major disciplines. This is facilitated by the framework nature of the SCES of the latest generations;

- poor development of normative and methodological tools for ensuring SIW, motivating the teaching staff to organizational decisions that enhance the role and significance of SIW at the present stage.

At the level of scientific and pedagogical activity of the teacher:

- the existing opinion about the SIW as a secondary activity that performs an auxiliary function;

- the unwillingness of a part of the teaching staff

to be engaged actively in the organization of self-educational activities of students.

At the level of scientific and educational activities of students:

- low motivation and lack of need for systemic self-educational activity;
- underdevelopment of skills and abilities of self-educational activity;
- lack of time for independent work (a considerable part of students combine study with work).

All these problems affect the quality of self-educational activity organization and its results.

The success of self-educational work of students depends largely on the quality of SIW management. It includes the choice of organizational and methodological means to stimulate educational activities, taking into account the readiness of students for this type of work, the information and methodological support of SIW and the level of creative interaction between the teacher and the student in the context of the SIW effectiveness.

The stimulating factor is an objective assessment of students' activities in the framework of independent work. There are needed reliable tools to assess the level and quality of independent learning activities.

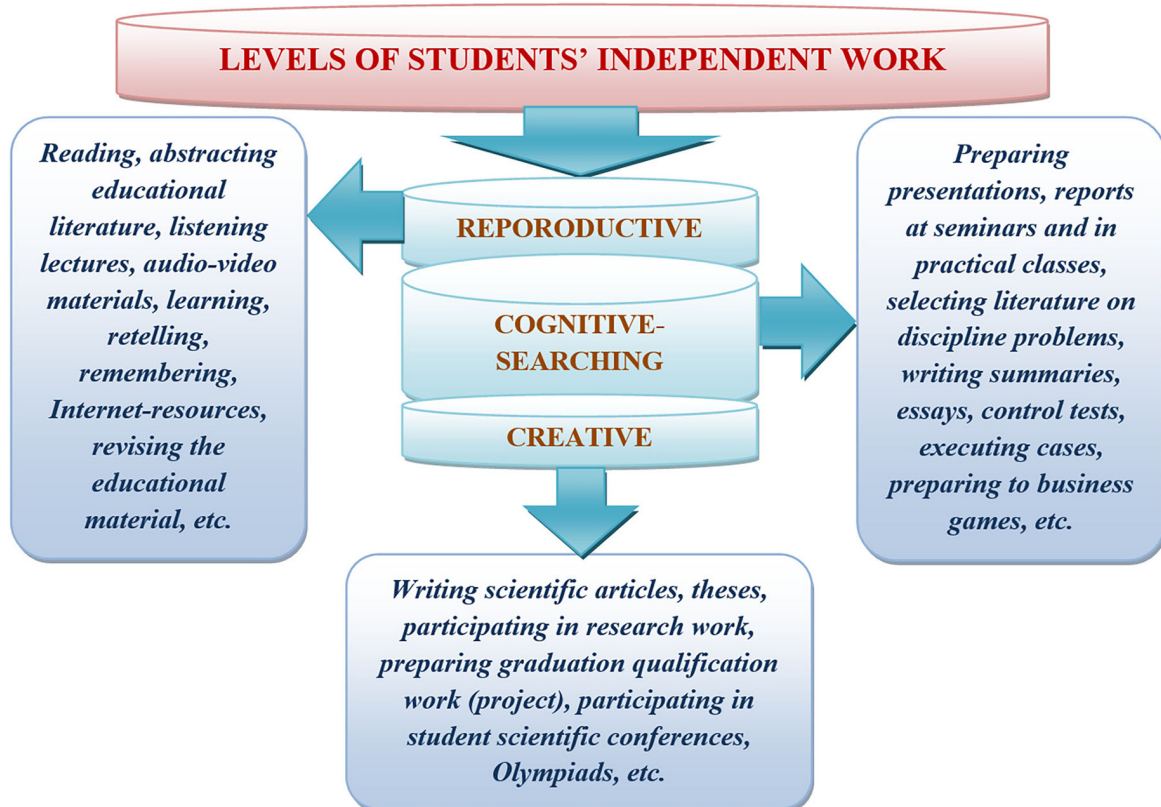
An important point is the requirements for organization of self-educational activities. Practice has convincingly proved that they must be skillfully dosed, taking into account the individual capabilities of students. It is necessary to develop a system for

monitoring the satisfaction of students and teaching staff with the level of SIW organization, its methodological support, and to improve constantly the culture of quality in implementing this most important component of the educational process.

Organization of self-educational activity of students is a complex and multidimensional process, which includes both the formation of motivation, the professional position of a future specialist, and the introduction of independent work in the process of mastering the content of training modules, in conjunction with SIW using modern pedagogical technologies [4]. An interesting model is organization of self-educational activities of students, in which, using the normative and information-methodological base of SIW, the relationship between the teacher and the student in the educational environment, support and organization of conditions for independent work is shown.

The rules of organizing the educational process on the credit technology of education in the Republic of Kazakhstan indirectly prescribe several levels of independent work of students [6]. The reproductive level provides for the acquisition of knowledge mainly in the classroom (see Figure). The cognitive-search level focuses on the accumulation of new experience in self-educational activities (preparation of speeches, reports at practical classes, seminars, writing essays, tests, preparation for business games, etc.).

The most complex and responsible is the creative level aimed at the formation of a methodology of



knowledge and methods of research activities (direct participation in research, writing scientific articles, participation in scientific conferences, competitions, preparation of materials for obtaining patents for inventions, etc.).

A harmonious combination of all these levels will become a kind of guarantee for the successful organization of students' self-educational activities.

An important component of effective self-educational activity of students is the presence of motivational factors. The integral motivation should be the readiness of the demanded graduate for further effective professional activity in the chosen area of training.

This will become a reality if there are stable motivational factors: the interested participation of teachers in SIW organization, the use of various individual forms of SIW organization with the use of intense pedagogical techniques, the readiness of students for creative activity, the existence of a system of social support and encouragement of students.

The key role in organizing the students' independent work belongs to the teacher, who must cooperate with a specific person with individual abilities. Students should realize that self-educational activity is performed not for the teacher but for them, for their future, for their career growth.

The teaching staff should realize the need to increase the effectiveness of pedagogical work through communication with students. Parity partnership with students requires shifting the emphasis of significance from the processes of transferring and mastering knowledge to their independent search.

Organization of students' self-educational activity at a technical university is a complex process associated with the inclusion of independent work in the process of mastering the essential content of training modules, the formation of motivation and a professionally oriented position of a future graduate. All this will require the readiness of all the participants in the educational process for dialogue.

The growing role of students' self-educational activity actualizes the development of its methodological support. It is extremely important to develop an intra-university regulation on the self-educational activities of students. There are needed instructive and methodological materials for the teaching staff that regulate the educational process and organizational decisions that enhance the importance of independent work. It is necessary to develop an introductory course on the methodology of independent work, which provides training for students in the methods and forms of self-educational activity, the development of skills and abilities of independent work.

Higher technical school is in dire need of using active teaching methods, when the motivation for self-educational activity becomes not only personal but also social significant. Such training brings an innovative quality to the traditional form of the educational process. A high degree of student involvement in self-organization and self-regulation of this process together with teachers is necessary.

Conclusion

It is difficult to overestimate the relevance of students' self-educational activities that which is the key issue in solving the problem: how to teach a person to learn and think. The problems of organizing independent work of students have not yet been fully resolved. Organizational and methodological efforts are needed to develop a system for managing independent work and its methodological support. A high degree of involvement of students and teachers in the successful implementation of this joint activity is needed. On a systematic basis, there should be monitored the students and teachers' satisfaction with the level and quality of organization of self-educational activities. It is necessary to develop innovative approaches to improve SIW effectiveness, in particular, to find ways to motivate students and the teaching staff in enhancing independent cognitive activity.

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Техникалық университетте студенттердің өзін-өзі білім беру қызметінің әдістемесі

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Аңдатпа. Техникалық жоғары оқу орындарында студенттердің өзін-өзі тәрбиелеу іс-әрекетінің әдістемесі қарастырылады. Студентке бағытталған оқытуға кешу жағдайында студенттердің өзіндік жұмысының рөлі айтарлықтай арта түсетіні атап өтіледі. Өзіндік жұмыстың әртүрлі деңгейлері сипатталады. Оқушылардың өзін-өзі тәрбиелеу іс-әрекетін ойдағыдай ұйымдастыруда мұғалімнің шешуші рөлі атап өтіледі. Техникалық жоғары оқу орындарында өзіндік жұмыстың тиімділігінің болмауының себептері қарастырылады. Өзін-өзі тәрбиелеу қызметін күшейту бойынша ұйымдастырушылық-әдістемелік ұсыныстар берілген.

Кілт сөздер: студенттердің өзіндік жұмысы, мұғалімнің рөлі, СРС тиімділігі, шығармашылық тапсырмалар, СРС деңгейлері, мониторинг.

Методология самообразовательной деятельности обучающихся в техническом университете

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Аннотация. Рассмотрена методология самообразовательной деятельности обучающихся в технических университетах. Отмечается, что в условиях перехода к студентоцентрированному обучению существенно повышается роль самостоятельной работы студентов. Описаны различные уровни самостоятельной работы. Акцентируется ключевая роль преподавателя в успешной организации самообразовательной деятельности обучающихся. Рассмотрены причины недостаточной эффективности самостоятельной работы в технических вузах. Даны организационно-методические рекомендации для усиления самообразовательной деятельности.

Ключевые слова: самостоятельная работа обучающихся, роль преподавателя, результативность СРС, творческие задания, уровни СРС, мониторинги.

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