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EDUCATIONAL ENVIRONMENT CONTRIBUTING TO DEVELOPMENT OF COGNITIVE ACTIVITY OF STUDENTS WITHIN THE CREDIT SYSTEM OF EDUCATION

Abstract

The article is devoted to the urgent issue of development of cognitive activity of students within the credit system. It describes such integral parts of educational environment leading to the effective formation of students' cognitive activity as high-quality information support of the educational process, inclusion of students and teachers in classroom interaction and extracurricular activities, engagement of students in self-education.

Keywords: *cognitive activity, self-education, credit system, information support, quality of education, interaction, educational environment.*

1. Introduction

One of the primary goals of the development of Kazakhstani education is successful integration into international educational space. The Bologna Agreement signed by the Republic of Kazakhstan has become the starting point of its implementation. It emphasizes the importance of creating conditions for the academic mobility of students, the full realization of their personal potential, and requires an individual approach to scheduling of the educational process. This requires students to have such qualities as independence, readiness for self-education, cognitive activity. In this regard, the problem of development of cognitive activity of students within the credit system of education becomes especially urgent.

Without dwelling in detail on the historical formation of the problem of the cognitive activity of students in pedagogical and psychological science, it should be noted that in understanding this phenomenon we adhere to the holistic approach presented in the studies of A.I. Krupnov (2001), T.A. Guseva (2009), E.D. Khlestovoy (2009), N.F. The Szlachta (2008). In accordance with this, *cognitive activity* is interpreted as a qualitative dynamic characteristic of the subject of educational activity, aimed at understanding the surrounding world, other people and himself and including a set of key competencies. Therefore, it is to be assessed by the content, dynamic and efficiency, affecting the fluency of task performance, initiative, productivity.

Cognitive activity, as a dynamic characteristic of an individual, acquired, consolidated and developed throughout the process of cognition, is a complex structural formation and includes the following structural components: motivational, regulatory, dynamic, effective and reflexive ones. On the basis of a holistic analysis of the phenomenon under study, we came to the conclusion that the parameters characterizing the structural components of students' cognitive activity can be the basic personality properties that provide information-cognitive and regulatory-reflexive aspirations of the subject of learning activity.

The regulatory component is mainly characterized by perseverance to complete cognitive tasks, to focus on a goal overcoming obstacles on the way to it. Indicators of the dynamic component are curiosity, which determines the state of readiness and persistence of the subject's aspirations to learn new information, and initiative, which proves the motivation for the new, to advance

the available stimulation and the willingness of the subject to produce a variety of cognitive ideas. Reflexive component – responsibility, as a characteristic of the state of readiness of the subject to be responsible for his cognitive actions, guaranteeing the achievement of the result on his own. Motivational and productive components – the integration of motivational and productive components of all components mentioned above.

Peculiarities the credit system of education is characterized by make it essential to develop cognitive activity of the students (EG Belyakova, 2014, AA Zhaytapova, 2004; VI Zagvyazinsky, 2012; IG Zakharova, 2015; E. Froment , 2003; K. Zeichner, 2010). In the present article “the credit system of education” is defined as «learning environment aimed at increasing the level of self-education and skill acquisition by means of individualization, election of an educational programme within the framework of the regulation of the educational process and the number of subjects accounted by credits "(VG Ivanov, GR Iksanova and FL Ratner , 2007).

The basis of the modern education system is a high-quality information and pedagogical environment that allows us to radically modernize the technological base, move on to new information technologies in education corresponding to the system of open education. Therefore, the first condition for the effective development of cognitive activity of students within the credit system of education is the qualitative information support of the educational process.

Information support of the educational process is referred to as "a set of preparations and provision of special information necessary to handle pedagogical management tasks in the system of education" (AI Sevruk, 2004, p.14). According to ISO 9000: 2000 "Quality management system. Basic principles and glossary "quality is interpreted as" the degree of conformity "of the" permanent distinctive features "of an object with the" needs or expectations that are established, being assumed or mandatory "(VI Bidenko, J. Vann Zannworth, 2001). Accordingly, the quality of education is understood as the extent to which it meets the needs or expectations of interested parties. Based on the above definitions, we believe that the quality information support of the educational process has two aspects: 1) the quality of the educational information that is offered to students in the process of training and preparation for it; 2) management information on the state of the educational process, which should be owned by the administration of the university, teachers, students.

Implementing the terms mentioned above each student is provided with an information package which includes instructions on the organization of the educational process (general for the university), the student's guidebook, the teaching and methodological complex of the specialty and the subject.

Qualitative information support of the educational process leads to a change in the position of a teacher and a student. Compared to a traditional system where the main carrier of information is a teacher who mostly transmits ready knowledge, restricts information, the credit system of education requires the switch of roles. The teacher ceases to be the only (main) carrier of information, and the student is passively receiving knowledge. In the framework of the credit system both teachers and students become active participants of the educational process, their relationship is acquired by the subject – subjective character, based on trust, mutual respect, equality and interaction.

The result of such kind of interaction is the emergence of subjective positions of the participants in the dialogue, experience of dialogue communication, when the participants of joint activity seek to understand the ideas his communicative partner has in mind, take into account and satisfy his information needs, and help the partner to state the idea. Only unconditional acceptance of the student's personality, in an atmosphere of benevolence and trust makes the use of dialogue communication in the educational process possible. Besides, in our opinion, the development of cooperative relationships within the credit system of education is associated with voluntary acceptance of the stimulating role of the teacher by the students, which manifests itself in the desire to learn from him, to communicate with him, to imitate him. It should be noted that in this case a spiritual image of the teacher himself, his professional competence, creative attitude to the matter, ability to cooperate with colleagues play an important part. In our research this term was implemented by means of sign-contextual technology and interactive learning.

Learning process within the credit system of education requires the students to be able to enrich their knowledge on a regular basis, search and process new information, apply various sources of information to the learning process, thus contributes to the development of students learning activity. It is to be noted that independent learning within the credit system of education is of primary importance as twice more time is scheduled for it. This led to the need for a third term for the development of cognitive activity of students in the credit system of education, which is focus on self-education.

The program of self-education is defined by an individual educational programme based on an individual curriculum for each student and the selection of elective subjects. Such a program provides an individual and differentiated approach to each student, taking into account his personal qualities, abilities, interests, motives, contributes to the development of a conscious attitude towards his activities and feedback.

Research Goal: to work out, theoretically substantiate and experimentally test the efficiency of pedagogical terms for the development of cognitive activity of students in the credit system of education. The set goal taken into account, the following strategy was worked out:

The first stage (preparatory) is the definition of a research sample and comparison groups. The respondents – 1-4 year students of Kostanay State Pedagogical Institute and Kostanay State University named after A. Baytursynov (Kazakhstan): "Pedagogy and Psychology", "Psychology". The total number of participants – 110. The second stage (diagnostic) is the study of the dynamics of the skills of self-organization of educational activities in the process of vocational training. The third stage is processing and interpretation of the results of the study.

2. Materials and techniques.

Based on the requirements for determining criteria, analyzing research on the development of cognitive activity of students and taking into account the peculiarities of our subject of research, we determined the criteria for the development of students' cognitive activity: motivational, cognitive and operational ones. Motivation for educational activity and cognitive interest were chosen as indicators characterizing motivational criterion, since the increase of the students' emotional and intellectual tone and mental reactions are affected by them. Since cognitive activity is associated with the substantive and procedural aspect of educational and cognitive activity, the implementation of which is impossible without knowledge and skills, as indicators of the cognitive criterion, knowledge of the methods of cognition and knowledge of the modes of activity. To evaluate cognitive activity of the students the following methods were employed:

1. An Interview. This method of research was used by us to obtain information about participants of the experiment, and also to clarify the results of the questionnaire, self-assessment. Particular attention was paid to issues related to the attitude to learning activity, the future career, interests of students;

2. Observation.

This method involves direct perception of student learning activity, systematic recording learning ability of subjects during the learning process. Learning ability of the subjects of the learning process manifests itself in its features and character (G. Klaus, 1987, p.29). Developed individual styles can be schematically represented by two poles: "positive" and "negative". Students with a high level of cognitive activity have a positive type of individual style of learning, for students with a low level of cognitive activity, a negative type of individual style of learning activity is inherent. Students with an average level of cognitive activity may follow both of them, but gravitate toward a positive type.

3. Testing. This method was used to evaluate students' learning achievements. It's proved by the studies of IA Bobrova (2008), SN Kaznacheeva (2007) that there is a linear form of dependence between the level of cognitive activity and student achievement, with coefficients R from 0.876 to 0.994. In this regard, we can conclude that, the higher the student performance leads to the higher level of cognitive activity. Thus, qualitative and quantitative assessment of students' assignments was used to define the level of learning activity by cognitive and operational criteria. Accu-

mulation of points was carried out during the current, middle-term and final control. The scale used in the credit system was used in the assessment.

4. *Methods of K. Zamfir under A. A. Rean modification "Motivation of Professional Activity"*. The concept of intrinsic and extrinsic motivation underlies this technique. The results of this technique define the motivational complex of an individual. The higher the individual is motivated the more focused on the content of learning he is, which makes him more determined to succeed and decreases emotional instability. The students with a high level of cognitive activity are likely to be self-motivated; the ones with an average one are to be motivated by the external factors; extrinsic negative motivation is typical for students with low-level cognitive activity.

5. *Methodology for studying self-esteem with the help of a ranking procedure*. Students were asked to rank 20 personality traits that characterize the cognitive activity of students. In the column "Ideal", the subjects ranked these qualities from 1 to 20 points by the extent to which they are impressed by them. Then in the column "I" ranked these qualities in relation to themselves. Between the desired and real level of each of the indicators, the difference d , which was squared (d^2), was determined. Next, the sum of the squares ($\sum d^2$) and the formula $r = 1 - 6\sum d^2 / n(n^2 - 1)$ was calculated, where n is the number of qualities, knowledge and skills used in the ranking, and the correlation coefficient was determined. Closer the ratio to 1 (from 0.7 to 1.0) indicates the higher the self-esteem (and vice versa). The coefficient of 0.4 to 0.6 indicates an adequate self-esteem.

6. *Criterion of Chi - a square, which is determined by the formula:*

$$X^2 = \frac{1}{n_1 \cdot n_2} \cdot \sum_{i=1}^n \frac{(n_{1i} \cdot h_2 - n_2 \cdot h_{1i})^2}{h_1 + h_2}$$

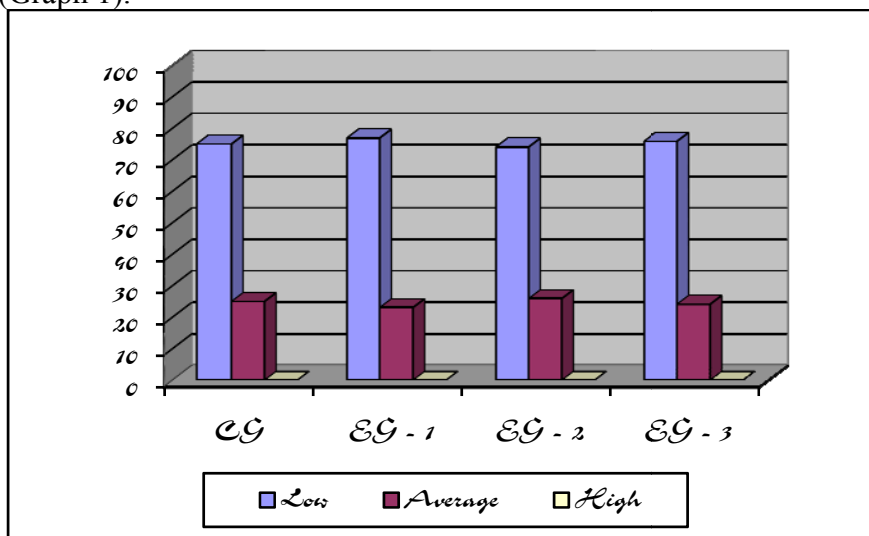
n is the number of students in the compared groups;

h is the number of students at each level.

3. Results and discussion.

Since our research was aimed at identification of pedagogical terms of the effective development of students' cognitive activity in the credit system of education, an experiment plan with preliminary and final evaluation and several experimental groups was used. In the control group (CG), training was conducted without introducing pedagogical terms for the development of cognitive activity of students in the credit system of education. In the first experimental group (EG-1), the efficiency of the first term is verified; in the second group (EG-2) – the one of the second term; in the third group (EG-3) - the efficiency of the entire set of terms.

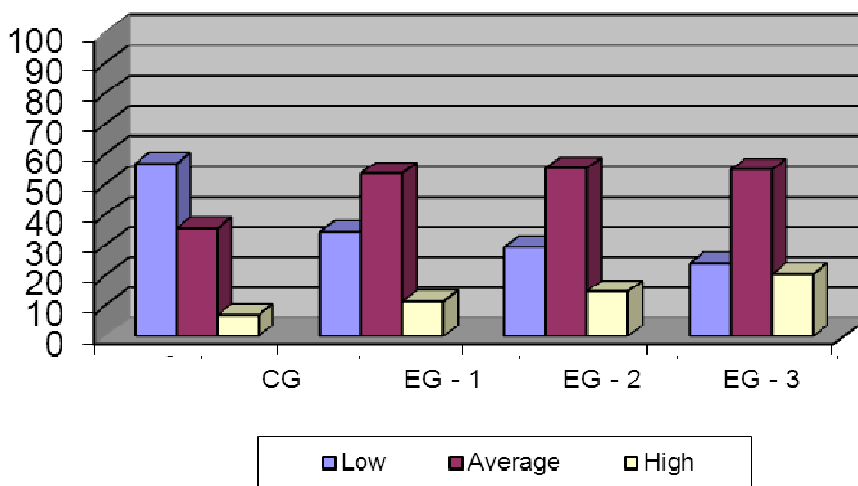
The observational stage of the experiment showed that 70% to 74% of students have a low level of cognitive activity, the average level is observed in 25% -29% of students, high level – up to 4% of students (Graph 1).



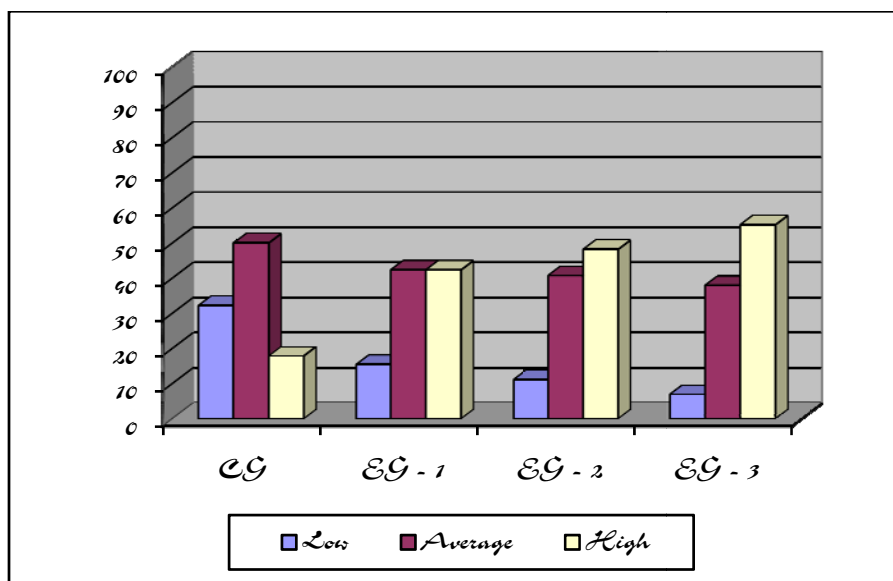
Graph 1 - Results of the preliminary evaluation of levels of cognitive activity of students

Thus, the results of the ascertaining stage of experimental work have shown that the level of cognitive activity of students is inadequate. Calculation of the χ^2 criterion has shown that the probability of obtaining our value is high enough (at least 0.61), and therefore it can be concluded that the experimental data on the detection of levels of cognitive activity of students confirm the null hypothesis, that is, the students of the control and experimental groups are distributed equally.

During the formative experiment (2015-2018 academic year), two evaluation tests (interim and final ones) were done, which resulted in the data presented in Graphs 2 and 3.



Graph 2 Results of interim assessment of students' learning activity



Graph 3 – Results of final assessment of students' learning activity

Evaluation of the data obtained from both tests shows an increase in the number of students in the experimental groups with a high level of cognitive activity (in EG-3 to 20.69%, in EG-2 to 14.82%, in EG-1 to 11.54%). The number of students with a low level of cognitive activity (in EG-3 to 22.14%, in EG-2 to 29.63%, in EG-1 to 34.62%) significantly decreased. Students with the average level made 55.17% in EG-3, 55.55% in EG-2, 53.84% in EG-1. The results of the intermediate and final tests compared, we came to the conclusion that the number of students possessing a higher level of cognitive activity tends to increase steadily. Moreover, in EG-3, where a set of pedagogical terms was used, it is much higher. So, in EG-3, students with a high level make up 55.17%, in EG-2 – 48.15%, in EG-1 – 42.31%. The difference in the results of EG-1, EG-2 and EG-3 allows us to conclude that the development of cognitive activity of students in the credit system of

education is more effective in the group where a set of pedagogical terms is implemented. In the control group of CG, there is also an increase in the number of students with a high level of cognitive activity (17.86%) and a decrease in the number of students with a low level of cognitive activity (32.14%). In this regard, we can state cognitive activity of students in this group is being developed at a slower pace. This is confirmed by the figure X2, which is close to zero (when comparing CH and EG-3) or very low – 0.03 (KG and EG-2). The results of the comparison of EG-1 and EG-3 show that we can adopt an alternative hypothesis at a significance level of 0.45. Therefore, we can conclude that the use of the whole complex of the pedagogical terms we have singled out gives better results than the application of each separately.

Conclusion.

The pedagogical experiment, carried out within the framework of the study, showed an increase in the level of cognitive activity of students in all experimental groups. The highest results were observed in groups where the educational process was arranged within a full set of pedagogical terms. Thus, the results of the forming stage of the experiment showed an increase in the level of cognitive activity of students in all groups, but the most significant changes are proved to be in the experimental groups. The number of students with a high level of cognitive activity increased in EG-3 to 55.17%; in EG-2 to 48.15%; in EG-1 to 42.31%. In the control group of CG, where the learning process wasn't carried out within pedagogical terms, it increased insignificantly (to 17.86%). The results of the processing of the experimental data by the criterion X2 indicate that the differences in the effectiveness of the development of cognitive activity of students in the credit system of training are significant with the level of 0.005-0.12.

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**СМАГЛИЙ, Т.И., СМАГЛИЙ, Т. А.
ПЕДАГОГИЧЕСКИЕ УСЛОВИЯ РАЗВИТИЯ ПОЗНАВАТЕЛЬНОЙ АКТИВНОСТИ
СТУДЕНТОВ ПРИ КРЕДИТНОЙ СИСТЕМЕ ОБУЧЕНИЯ**

Статья посвящена актуальной проблеме развития познавательной активности студентов в условиях кредитной системы. В ней описываются педагогические условия эффективного формирования познавательной активности студентов, в качестве которых выступают: качественное информационное обеспечение образовательного процесса, включение студентов и преподавателей в диалогическое общение в аудиторной и внеаудиторной деятельности, ориентация студентов на самообразовательную деятельность.

Ключевые слова: *познавательная активность, самообразование, кредитная система, информационное обеспечение, качество образования, диалогическое общение, педагогические условия.*

**СМАГЛИЙ, Т.И., СМАГЛИЙ, Т. А.
ОҚЫТУДЫҢ КРЕДИТТІК ЖҮЙЕСІНДЕ СТУДЕНТТЕРДІҢ ТАНЫМДЫҚ БЕЛСЕНДІЛІГІН
ДАМУЫН ПЕДАГОГИКАЛЫҚ ШАРТТАРЫ**

Мақала кредиттік жүйе жағдайында студенттердің танымдық белсенділігін дамытудың өзекті мәселесіне арналған. Онда студенттердің танымдық белсенділігін қалыптастырудың педагогикалық шарттары сипатталады, олар: білім беру үрдісін сапалы ақпараттық қолдау, студенттер мен оқытушыларды аудиториялық және сабақтан тыс іс-шараларда диалогтық қарым-қатынасқа қосу, студенттерді өзін-өзі тәрбиелеу іс-әрекетіне бағыттау.

Мақаланың мәнін ашатын сөздер: *танымдық белсенділік, өзін-өзі тәрбиелеу, кредиттік жүйе, ақпараттық қолдау, білім сапасы, диалогтық байланыс, педагогикалық шарттар.*

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**COMPARATIVE CHARACTERISTICS OF THE MORPHOFUNCTIONAL STATE
OF STUDENTS IN UNIVERSITIES**

Abstract

Comparative characteristics of the morphofunctional state of students in Universities.

This article is devoted to comparing the results of a practical study conducted on the basis of the Kostanay State Pedagogical University (KSPU) and the Novosibirsk State Pedagogical University (NSPU), in order to identify differences in morphofunctional indicators between first-year students, depending on gender and place of study. It has been established that students of KSPU, in comparison with students of the NSPU, characterize with low anthropometric parameters, economical consumption of oxygen by the myocardium, higher vital and carpal indices.

Keywords: *morphofunctional indicators, health, physical development, sexual differentiation, students.*