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FORMATION OF COGNITIVE INTEREST OF FUTURE NATURAL AND MATHEMATICAL DISCIPLINES TEACHERS

ФОРМИРОВАНИЕ ПОЗНАВАТЕЛЬНОГО ИНТЕРЕСА БУДУЩИХ УЧИТЕЛЕЙ ЕСТЕСТВЕННО-МАТЕМАТИЧЕСКИХ ДИСЦИПЛИН

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Abstract. *Modern higher educational institutions are designed to form the personality who could live in democracy conditions, in the situation of the increasing of personal freedom, to compare the actions to civic and professional duty and social responsibility.*

It is emphasized in the article that one of the most important conditions of learning efficiency and self-development is the students' cognitive interest. It is very important to not only create cognitive interest, but also to hold, fix it at all levels of study in the process of students' training. The cognitive interest not only reflects the internal contents and the attitude towards the actual reality, but also remains the main creativity source of creativity.

Keywords*: cognitive interest, information cognitive technologies, creativity, creative activity, creative potential.*

STATEMENT OF THE PROBLEM

One of the most important conditions for the education and self-development effectiveness is the students' cognitive interest. Interests reflect both internal content and attitude towards the environmental reality, and make a creativity source.

The interest in scientific research is considered as a form of emotional expression of a person's need (P. Kryazhev, V. Myasishev, E. Anufriyev, M. Dobrinin, A. Petrovsky, D. Kiknadze and others), as its selective orientation (G. Schukin, T. Malkovskaya), motivational factor. We assumed that cognitive interest is an important feature of professional activity, which provides cognitive activity and conflicts with the student's existing knowledge. In dialectical unity with needs and motives, interest is the basis of creativity and at the same time its indicator.

K.Ushinsky wrote that "training without any interest and extracted only by force of coercion, kills the pupil's willing to studies, without the ones he won't be able to move forward" [2, p.23]. The outstanding scientist's words show that professional training should be oriented not only to the formation of certain knowledge, capabilities and skills, but also to the personal meaning reveal of its content, to ensuring of its focus on professional formation, to the adequate attitude of students to the development of cognitive interest. The lack of cognitive interest inevitably turns into a formal students' training in natural and mathematical disciplines.

Thus, L. Bozhovich [1] believes that cognitive interest has a great motivational force: it forces a person to actively knowledge seeking, ways and means of satisfying the "thirst for knowledge." G. Schukina also points that interest acts as "the powerful activity motivator of personality, under influence of which all mental processes

proceed especially intensively and tensely, and the activity itself becomes fascinating and productive [3].

Statement of the main material

In the process of students' training, it is important not only to form a cognitive interest, but also to keep it, to consolidate it at all stages of education. There is a distinction between occasional and sustained interest in psychology. The first arises and persists only in the process of specific activities, and after its termination, it fades away. Sustained interest is characterized by the fact that it is already a feature of the individual and encourages human activity even when the conditions are unfavorable. It is the sustained interest that plays a major role in the process of vocational training. Interest is connected with labor, with overcoming obstacles and therefore is an important condition and motivator in the development of such individual qualities as determination, perseverance, hard work.

Naturally, cognitive interest begins with the elementary curiosity. In the future it can develop into curiosity, and at the highest stage of development - into a habit of systematic mental work, mental search.

Sustained cognitive interest is formed in the case of a combination of emotional and rational learning. This is especially important for natural mathematical disciplines, as their content is built on a logical basis, limits the impact on the emotional sphere of students. After all, as is known, without human emotions there is no human search for truth.

Interest is a special attitude towards anything or anyone, it's also the need for emotional experiences gained from some actions, from some people or objects. Like any mental process and even the focus of the individual - cognitive interest is created in cognitive activity.

The use of information and cognitive technologies allows students to immerse themselves in an open information and educational environment that provides wide opportunities for subjects of the educational process. The developed information, network, telecommunication systems provide opportunities for education in internal, intramural and extramural or correspondence forms in the on-and off-line modes; access to e-learning resources; In bringing teachers and students together into virtual professional communities. The productive use of these opportunities of information and cognitive technologies in the implementation of the educational process contributes to the real individualization, openness and education heterogeneity, as well as to the improvement of the educational process quality.

Due to the background of general positive attitude to teaching, to educational activities, to individuals and objects taking part in it, the students' cognitive activity, organized by the teacher, completes the development of interest in pedagogical activities. At the same time, it is very important that cognitive interest be quite intense. The cognitive interest is well developed in some students, at the same time being poorly developed in others.

In order to determine the state and possibilities of cognitive interest formation of students at the pedagogical university, it became necessary to carry out a statement experiment, which covered 450 students and 65 teachers of Bogdan Khmelnitsky Cherkasy National University.

To determine the level of cognitive interest the questionnaire proposed by V. Yurkevich was used in the study.

During the experiment, the prevalence of low and medium levels of cognitive interest of students was determined. The data obtained during the reporting experiment suggest that little attention is paid to the development of cognitive interest. Digital data show that only 7.3% of control group students and 6.5% of experimental group students have a high level of cognitive interest. 41.4% of control group students and 42.3% of experimental group students have a low cognitive interest level. This is the evidence of high reserves that are not used. As the research has shown, a large proportion of students have a very unclear amorphous localization of cognitive interests. Situational interest is most common. Students do not focus on cognitive tasks, are often distracted, are engaged in extraneous affairs and scattered in classes. However, it cannot be said that they have no interest in training. With external stimulation, it becomes vivid, but it is not stable and necessarily requires external incentives.

This situation is explained by a number of reasons: insufficient use of information and cognitive technologies; creation of an innovative environment in higher education institutions is not fully developed, the lack of readiness of teachers and students for systematic innovation, the poverty of methodical support of the educational process and the underestimation of psychological support.

It has been determined that students do not always see the immediate importance of the knowledge received in their future professional life. The observations have shown that in the practice of higher education there is still an underestimation of information and cognitive learning technologies and a reassessment of the traditional approach to the organization and class management; interactive learning forms and methods ignoring. The process of formation of cognitive interest is not systematic; students' preparation for information and cognitive activities is not sufficient.

Thus, the stating experiment made it possible to conclude that the cognitive interest of students is not sufficiently developed and special work in this direction is necessary.

Analysis of the obtained facts suggests inefficiency of traditional training.

All the evidence facts confirm the assumption that there is no special work on formation of cognitive interest of future natural and mathematical disciplines teachers. The stating experiment found that the essence of cognitive interest formation is not realized by all teachers (and if it is, that is done very approximately) therefore and is not used. Thus, the analysis of the problem study in the practice of higher education made it possible to determine the tasks, content and methodology of the forming experiment.

The collected data confirmed the need of development and a programme implementation of experimental work, the purpose of which was to provide pedagogical conditions that stimulate the development of cognitive interest of future natural and mathematical disciplines teachers. All this resulted into a forming experiment conduction.

Information and cognitive technologies were used to develop cognitive interest in the educational process.

Tasks selection using information and cognitive technologies always resonates with students, so students were instructed to select them independently. Information and cognitive technologies were used:

1) during diagnostic testing of the quality of learning material absorption;

2) in training mode for working out elementary skills and abilities after studying the topic;

3) in the training mode, in the process of studying a new topic;

4) when working with students as a condition of increasing interest in the learning process;

5) in self-study mode, when students who have missed classes can individually fill the knowledge gaps;

6) in the mode of complex processes modeling, which allows to visually reproduce scientific models, described by means of mathematical equations;

7) for graphical illustration of the material studied and for solving graphic problems;

8) in the mode of data processing, which allows the teacher to obtain comprehensive information about the student 's identity, to classify the mistakes made, to detect knowledge gaps.

Analysis of the information and cognitive technologies use makes it possible to argue that skillful organization of work in classes will help the teacher to achieve the management of learning process, in which the individual characteristics of students will be taken into account to the maximum extent.

The computer is able to trace all kinds of chains faster and more precisely, and a person has a creative approach to solving any problem. However, his creative activity is largely constrained by the need to analyze numerous and confusing connections.

The ability to simulate reality in a computer and quickly produce variant analysis is just the step that provides synthesis of creative capabilities of a person and a computer, implementing logical procedures.

It was noted that during the forming stage of the experiment, cognitive interest has become more stable if students are given the opportunity to demonstrate their personal qualities, to perform creative tasks, to carry out and offer their own project, to express their views on the discussed educational problem.

The implementation of the experimental program in experimental groups has had a positive impact on the level of cognitive interest formation of future natural and mathematical disciplines teachers.

Having analyzed the results, the conclusion has been done that during the forming stage of the experiment 7.1% of students of the control group and 37.3% of students of the experimental group have a high level of cognitive interest. 40.3% of students of control group and 7.1% of students of experimental group have a low cognitive interest level.

Cognitive interest is not used with a stamp and template, so the involvement of acquired knowledge in various situations and tasks testifies to its flexibility; it is free in use and can contribute to the desire to penetrate deeply in cognition. Because of a number of studies, we were able to make sure that this indicator of free and flexible operation of knowledge demonstrates high level of cognitive interest.

The active use of the acquired scientific knowledge is a very significant indicator of cognitive interest, showing that knowledge itself has already become a new method of cognition, and cognitive interest has risen to a higher level of its development.

High level of cognitive interest leads the student to causal relations, to the identification of patterns, to the establishment of common principles, phenomena operating in different conditions. This level can be combined with elements of experimental and creative activity and with acquisition of new and improvement of previous training ways. At this level, in the educational process, the movement of the student is particularly tangible, not only the learning of general knowledge, but also a deep indirect awareness of the most important, essential aspects of the subject under study, which is able to see the dialectic of phenomena, reveal a deep interest in knowledge of patterns.

It was usually the case that the student relied in proof of his judgment on empirical knowledge due to his observations and impressions, on some fragmentary examples that were especially remembered, or these were cases from his life. Such demonstration of student's activity becomes also the evidence of cognitive interest, but of a different, lower level.

The introduction of information and cognitive technologies in the planning and class management significantly expands opportunities for learning, development and growth of cognitive interest of future natural and mathematical disciplines teachers. Students acquire the skills of active dialogue, highlighting the main point, arguing for their own position; cognitive interest rises to a higher level. Students develop a creative approach to solving various problems, which allows finding a way out in any situation.

Conclusion

On the basis of the research we can state that the use of information and cognitive technologies awakens and forms a cognitive interest; ensures development of positive motivation, cognitive need; provides self-management of the learning process and successful formation of the knowledge system, promotes successful mastery of intellectual skills related to the processing of educational information, mastery of skills of cultural and mental activities; promotes teachers and students' cooperation, provides psychological comfort of each student, stimulates self-improvement, self-criticism, self-confidence.

The introduction of information and cognitive technologies expands opportunities for student's learning, development and growth. Students develop a creative approach to solving various problems, which allows compensating for the ageing effect of scientific information acquired at the university. Each class creates a favorable situation for the demonstration of students' creativity, formation of decision-making skills and readiness for creative personal responsibility for their result.

Reference

1. Bozhovich L.I. Problems of personality formation. . Moscow: Institute of Practical Psychology,1997.

2. Ushinsky K.D. Selected pedagogical works, Moscow: Pedagogika-Press, 2005.

3. Schukin G.I. Role of activity in educational process. Moscow: Education,1986.

Аннотация. *Изменения, происходящие сегодня в Украине, социальной жизни общества, экономике, образовании актуализирует проблему подготовки будущих учителей естественно-математических дисциплин которые имеют высокий уровень познавательного интереса, способных нестандартно действовать в кризисных ситуациях, творчески мыслить, использовать раннее приобретенный опыт в решении профессиональных практических проблем.*

В статье на основе анализа педагогической теории и практики раскрыты возможности и тенденции использования информационно-когнитивных технологий как средства формирования познавательного интереса

Мы исходили из того, что познавательный интерес является важной чертой профессиональной деятельности, которая обеспечивает познавательную активность и вступает в противоречие с имеющимися знаниями студента. В диалектическом единстве с потребностями и мотивами интерес выступает основой творчества и одновременно ее показателем.

Использование информационно-когнитивных технологий позволяет осуществить погружение студентов в открытую информационно-образовательную среду, которая предоставляет широкие возможности субъектам образовательного процесса. Развитые информационные, сетевые, телекоммуникационные системы обеспечивают возможности для получения образования в очной, очно-заочной или заочной формах в режимах on- и off-line; в обеспечении доступа к учебным электронным ресурсам; в объединении преподавателей и студентов в виртуальные профессиональные сообщества. Продуктивное использование перечисленных возможностей информационно-когнитивных технологий в реализации образовательного процесса способствует реальной индивидуализации, открытости и гетерогенности образования, а также повышению качества образовательного процесса.

Анализ использования информационно-когнитивных технологий позволяет утверждать, что умелая организация работы на занятиях поможет преподавателю добиться такого управления процессом усвоения знаний, при котором в максимальной степени будут учитываться индивидуальные особенности студентов.

Внедрение информационно-когнитивных технологий расширяет возможности для обучения, развития и роста личности студента. У студентов развивается творческий подход к решению различных проблем, что позволяет компенсировать эффект старения приобретенной в университете научной информации. Каждое занятие создает благоприятную ситуацию для проявления творчества студентов, формирование навыков принятия решений и готовности к творческой личной ответственности за их результат.

Ключевые слова: *познавательный интерес, информационно-когнитивные технологии, творчество, творческая деятельность, творческий потенциал.*

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