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The Study of the Students' Cognitive Activity in Training in High School

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Abstract: Cognitive activity with the content aspect is a system of perceptual, mnemonic and intellectual activity and from the form - as an individual, joint, or pseudo-individual pseudo joint activity. The aim of the training program is a major source of the future specialists psychological knowledge of the laws of the formation and development of cognitive activity, as well as skills and abilities to organize and manage these activities in the learning process at the university. The program is accentuated primarily by the content of mental activity, which is the highest level of cognitive activity. The courses "The Psychology of cognitive activity" and "The Psychology of creative activity" are intended for students of different specialties pedagogical institutes and universities.

Key words: Cognitive activity · High level · Medium level · Low level · Classification

INTRODUCTION

The problem of the formation of main components of students' activity in high school were investigated in many works of foreign authors: Dinther, M., F. Dochy, M. Baeten, E. Kyndt, K. Struyven, N.M. Ruijs, T.T.D. Peetsma, B. Belfi, M. Goos, B. De Fraine, U. Mager, P. Nowak, [1-5].

Based on the provisions on personal conditioning and system-structural nature of cognitive activity as a managed and controlled by the mind of the subject process, we have attempted to highlight the components of cognitive activity. It is recognized that the structure of any activity, including cognitive and should include the motives, goals, resources, actions and results. Therefore, the structure of cognitive activity are primarily the motives that prompt to activity; needs, underlying them, goals and objectives; actions and operations. Note that the selected components that we reveal the interrelated levels of internal regulation of cognition.

The Main Part: The essence of the personal component of the students' cognitive activity is contained in the content of goals, needs and motivations, the nature of linkages and relationships between them, the value orientations in the knowledge system. Qualifying component comprises the development of skills for analysis and synthesis, where a special role acquires the qualities of thinking, as criticality, breadth, flexibility, activity and creativity. This component of the structure of cognitive activity is characterized primarily by implementing the cognitive goals as a result of the application in practice, the achievement of practical action. During the learning process must take into account the person's ability to regulate itself.

The students' cognitive activity from different faculties and disciplines can be presented in the following criterial attributes:

The above assumptions are in our study, the subject of experimental and empirical testing.

The results of an experiment and the formation levels of students' cognitive activity are summarized in Table 2.

These data suggest that a considerable part of students' peculiar reproductive (34.8%), reproductive and creative (48.1%) and creativity (17.1%) nature of the solution of cognitive tasks.

As a result of ascertaining study have been documented three main levels of formation of the students' cognitive activity high, medium, low.

High Level: Students, characterized by a pronounced and sustained desire for increased demand and the accumulation of professional knowledge and skills. In the study of literature, they generally are not confined to the existing program on special subjects, skillfully attract additional sources of information, freely operate with the concepts, find their own solutions to a generalization of the facts. They confidently operate research skills and

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Table 1: Criterial attributes of the students' cognitive activity from different faculties and disciplines.

The criteria	Signs (indicators)
Personal	The motivation to acquire deep and strong knowledge of specialty;
Desire to expand and build knowledge, skills, experience in	The desire to realize their potential in achieving the goals;
the field of knowledge; belief in the need of responsible attitude to knowledge	The need for expediency and the need to identify best practices in the
Qualifying	upcoming practice
Manipulation of concepts, logical connections of concepts in a	The ability to isolate the principal and less significant position in the
targeted search and information processing in the specialty	search of the sources of knowledge;
	The ability to establish relationships between different concepts,
	phenomena by means of comparative analysis of topical issues chosen field;
	The ability to identify and systematize the facts of the analysis of
	scientific and professional literature;
	Possession of the necessary search and research skills in organizing
	experimental work in the specialty;
	Self-control, self-awareness of the effectiveness of results achieved in
	solving the problems of the theory and practice;
	Creative use of theoretical knowledge to practical work in the
	upcoming selection of material

Table 2: Characteristics of the formation levels of students' cognitive activities (based on an experiment)

Components	Curri-culum	High level	Medium level	Low level
1. Personal	3 course	19,2 %	42,9 %	37,9 %
	4 course	23,8 %	59,1 %	35,3 %
2. Qualifying	3 course	17,4 %	41,4 %	41,2 %
	4 course	17,8 %	42,3 %	39,9 %

knowledge in organizing and conducting the experimental work, showing marked tendency to creative solution of cognitive tasks, which is an important stimulus to further educate themselves in the development of professional activity.

Medium Level: Seen in students that differ, in general, positive and conscientious attitude to study the material, but usually do not go beyond the requirements of the program in their speciality. They define the possible solutions to important issues, based on already proven options. They are sufficiently characterized by the ability to self-regarding, self-regulation and adjustment in operating concepts, the relationships of concepts in the cognitive processing of scientific and methodological materials. However, they often have some difficulties to find their own approach to solving certain problems. Students at this level are distinguished reproductive- creative solutions cognitive tasks.

Low Level: Observed in students who are not showing any desire to expand and build knowledge, skills and experience in the forthcoming practical profession. They usually can not do without the constant assistance of the teacher in operating concepts, the relationships of concepts in the processing of various information on the specialty. In solving professional problems, they mainly rely on a ready-made patterns or instructions without being able to carry out the analysis of basic phenomena in the work of teaching, research and professional literature, as well as provide self-adjustment in their learning activities. Students do not possess the necessary research skills in organizing and conducting experimental work in the specialty, the creative use of theoretical knowledge to practical work in the specialty, which indicates the nature of their reproductive cognitive activity.

It was assumed that the process of signification is initially given structure is a directed its transformation, which develops in two successively replacing one another trend:

With an increase in the number of visible elements (analytical aspect of cognition), the other - with the transformation of the background of the image space (the synthetic side of cognition).

The number of groups devoted to the first and second classifications, is a measure of information content: the larger group released during the first

Table 3: The average number of groups identified by the ISCA test, students of different specialties

Speciality	Classification first	Classification second
1. Psychology	4,12	4,73
2. History	4,84	5,24
3. Physical Education and Sport	3,92	4,36
4. Mathematics	4,82	4,48

Table 4: Distribution of types of ISCA among students of different specialties (in percents)

Specialty	Analytic-synthetic style	Synthetic-analytic style	Balanced style
1. Psychology	48	42	10
2. History	24	61	15
3. Physical Education and Sport	16	62	22
4. Mathematics	54	38	8

classification, the lower the amount of information in the converted at this stage, the configuration of points. Isolation of a larger number of groups in the second classification than the first, means that the manipulation of words used to restore elements of the original object. If there is an opposite trend, which means that the subject breaks away from the subject and its reflection, subjective model.

The difference in the amount of information, indicators of which is the number of available groups, with the first and second classification indicates the presence of an individual style of learning. The absolute value of this difference indicates the severity of ISCA and its sign (plus, minus) - in the direction of the prevailing trends in cognitive functions - analytic or synthetic (V. Yakunin, 1998) [6].

The following table shows average number of students allocated to groups in the first and second classifications.

Statistically significant differences between the number of cognitively homogeneous groups allocated in the first and second classifications, detected only by mathematicians. But the trend is increasing or decreasing the number of groups in primary and secondary distribution of cards among students with different profile of preparation, rather clear. Particularly pronounced differences in the prevalence of analytic and synthetic tendencies (style) in cognitive function, if one refers to the percentage distribution of the polar types of ISCA students surveyed departments.

These data indicate the predominance of the analytic-synthetic type of individual style of the students in mathematics and psychology, synthetic-analytical type - for students, historians and physical education and sport.

Based on the obtained results can be quite talk about the dependence of the formation of ISCA students of the subject area of their professional activities. Thus, the dominance of the majority of mathematicians and psychologists analytic-synthetic style quite right in line with the structure of their future careers and the place of mathematical knowledge. The formation of mathematical knowledge requires more accurate and detailed analysis of the object at the beginning of his knowledge and the most generalized and abstract representation of this object, for example, in the form of a mathematical model or formula at the final stage. Students-historians and speciality of physical education and sports, we have a somewhat different picture, as it related to the specifics of the humanities.

The results of the constative phase of the study enabled us to establish a low level of formation of cognitive activity in large part of students from different faculties and disciplines.

Attention is drawn to the fact that an important role in shaping the students' cognitive activity is motivation of educational and extracurricular activities. Under the motives of this kind of activity we refer to all factors that contribute to the manifestation of learning activity and in particular: the needs, goals, attitudes, sense of duty, interest.

Leading educational motives of the students are the following the motives of personal prestige, then professional and, finally, pragmatic (get a higher education diploma) and just informative. However, on the various courses of the dominant role of motivation is changing. In the first year leading motive - a professional, in the second - the personal prestige on the third and fourth years - both of these motives, the fourth - and more pragmatic. Of course, that the success of the training is

more influenced by professional and educational reasons. Note that the pragmatic motives were peculiar for not successful students.

A well successful students professional, educational and general social motives were expressed more than in the first place. It is also characteristic that good successful students educational motive was-the second, while students with average academic performance - the third. On the basis of the common motivation of educational activity (professional, cognitive, pragmatic, social and personal-social prestige) of the students there is a definite relation to different subjects, which could be due to:

- The importance of the subject for training;
- Interest in a particular field of knowledge and to the subject as a part thereof;
- The quality of teaching (satisfaction with classes on the subject);
- Measure of the difficulty of mastering the subject, based on their abilities and aptitudes;
- Relationship with teachers.

All these sources of motivation may be in different relationships with each other (interaction or competition) and have different effects on learning, so a complete picture of the motives of educational activity can be obtained only by identifying the importance of each student all the components of complex motivational structure. This will help establish motivational intensity in a given subject that is amount of motivation of educational activity: the more components causes this activity, the larger the motivational power.

Thus, conditionality ISCA her subject area indicates the activity the nature of individual differences in cognitive style and the differences themselves are determined by the contents and levels of cognitive activity. Individual style of cognitive activity is not only the effect, but a professional growth.

Professional development of students is not limited to the formation of knowledge systems. It also includes the absorption of certain skills. It is therefore important to analyze the peculiarities of manifestation of the students ISCA not only cognitive, but also in the formation of practical skills that can make a difference for students in training and in future careers.

The results obtained, provide a reasonable basis for asserting that a more complete development of the main components of the students' cognitive activity already in the walls of the university requires a special and targeted work.

We have developed and implemented in the educational process of the special courses in cognitive activity. A brief description of these special courses is given below.

The focus of the program, a special course "The Psychology of cognitive activity" given to the content side of cognitive function, psychological mechanisms of its formation and development of the learning process. Training program is based on the book "The Psychology of cognitive activity," Professor S.M. Dzhakupov [7].

When studying the students' cognitive activity a system-psychological analysis of the learning process, in which cognitive activity as a psychological reality revealed by the micro-level, system-psychological analysis was made. Cognitive activity with the content aspect is a system of perceptual, mnemonic and intellectual activity and from the form - as an individual, joint, or pseudo-individual pseudo joint activity.

The aim of the training program is a major weapons of the future specialists psychological knowledge of the laws of the formation and development of cognitive activity, as well as skills and abilities to organize and manage these activities in the learning process at the university. The program is accentuated primarily by the content of mental activity, which is the highest level of cognitive activity.

The course "The Psychology of cognitive activity" is intended for students of different specialties pedagogical institutes and universities.

	Distribution of hours	
No The program plan	Lectures	Work-shops
1. Introduction. The purpose and objectives of the course. Communication and activities.	2	
2. Activities, the essence and nature of activities.	2	2
3. Cognitive activity in the theory of activity.	4	2
4. Cognitive activity in the learning process.	4	2
5. Cognitive activity as a basis for managing the learning process.	2	2
6. Cognitive activity in terms of informatization of education.	2	4
7. Psychognosis of cognitive activity.	2	6
Total: 36 hours	18 hour.	18 hour.

This special course designed for 36 hours: 18 hours of lectures, seminars and workshops 18 hours.

In the general system of training the students of this course is to become one of the profiling. One of the objectives of the course is to train future professionals to master the basic techniques and methods of scientific creativity.

Achieving this goal due to the following tasks:

- To give future specialists a psychological understanding of scientific knowledge and the system of scientific research in the country;
- To equip future professionals methodologies and basic methods of scientific creativity;
- To teach future professionals to use the empirical, theoretical, psychological and mathematical methods of research;
- To give an overview of the processing of the results of scientific research, the introduction of them into practice.

The relevance of the proposed program due to the fact that at present there is a need for training high level of professionalism that can change and improve the lives and activities of their own and others.

The program outlines the main provisions relating to organization, formulation and conduct of the creative work in a form suitable for students of any specialty [8].

The proposed program of the course "The Psychology of creative activity" has the following structure:

	Distribution of hours	
Program material	Lectures	Work- shops
Society and science. Methodological foundations of scientific knowledge and creativity.	2	
Psychological characteristics of scientific work, its principles and structure.	2	2
The choice of the direction of scientific research, the logical structure of scientific research.	2	2
Theoretical and empirical methods of scientific research.	4	4
Psychological experiment, the procedure and characterization.	4	4
Processing of the results of experimental research.		
Interpretation and presentation of research results into practice.	2	4
	2	2
Total: 36 hours.	18	18

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