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TÍTULO: Estudiar la motivación, la reflexión, los estados emocionales y cognitivos en la percepción de la situación del entrenamiento.

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RESUMEN: El problema de la correlación de los estados cognitivos y emocionales con las características de la motivación educativa, así como el papel de la reflexión en el proceso de asimilación de nueva información por parte de los estudiantes, sigue siendo marginalmente estudiado debido a su versatilidad. El objetivo de nuestro estudio fue buscar diferencias en la estructura de las relaciones entre los estados cognitivos y emocionales experimentados por los estudiantes durante la lección, las características de la motivación del entrenamiento y los indicadores de reflexión cuando una nueva lección se percibe como poco clara y cuando el tema parece claro. El estudio utilizó cuestionarios de prueba de estados cognitivos relevantes para los objetivos del estudio. En el estudio participaron niños y niñas de 17 a 18 años.

PALABRAS CLAVES: motivación de la educación, estados cognitivos y emocionales, reflexión.

TITLE: Study of motivation, reflection, emotional and cognitive states in the perception of training situation.

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ABSTRACT: The problem of the correlation of cognitive and emotional states with the characteristics of educational motivation, as well as the role of reflection in the process of assimilating new information by students, remains marginally studied because of its versatility. The aim of our study was to search for differences in the structure of relationships between the cognitive and emotional states experienced by students during the lesson, the characteristics of training motivation and indicators of reflection when a new lesson is perceived as unclear and when the topic seems clear. The study used test questionnaires of cognitive states relevant to the objectives of the study. The study involved boys and girls aged 17-18.

KEY WORDS: motivation of education, cognitive and emotional states, reflection.

INTRODUCTION.

There is no doubt that a modern society needs to improve the educational system in both secondary and higher education. Along with learning difficulties, connected with the assimilation of a large volume of various information, there are also psychological and pedagogical problems. In particular, the lack of motivation of schoolchildren and students to study, indifferent, sometimes negative attitude towards classes significantly reduces the quality of mastering knowledge. On the one hand, mental states are an indicator of the general interest and activity in the training process, on the other - they serve as a background on which the motivation for learning either increases or gradually fades.

The issues of internal and external motivation, the value of meaningfulness and will in the process of acquiring knowledge are devoted to a lot of research. A special place among them is occupied by A.N. Leontiev (Leontyev, 2009) and D.A. Leontiev publications (Leontyev, 2016), devoted to the

study of the ratio of motivation, purpose and meaning in the structure of the subject's activity regulation. The notion of will and its importance in the development of the ability to self-control, in goal-setting and motivation for action was given great attention by E.P. Ilyin (Ilyin, 2002).

Among the great variety of mental states noted in a person in different life situations, cognitive states occupy a special place. AO Prokhorov and MG Yusupov singled out a list of cognitive states experienced in connection with the training process, most often referred as a characteristic of student's state during their studies (Prokhorov et al., 2015). Cognitive states are not only those that contribute to the knowledge, but also those that interfere with the assimilation of information.

The problem of correlation of different motivational structures and cognitive states in the context of training situations perceived by students with different emotional attitudes or with varying degrees of understanding of its necessity has been studied rather poorly. Meanwhile, the existence of reliable interrelationships between these characteristics shows that even if the study is perceived without enthusiasm and for some reason occupations cause negative emotions, it is possible to update such states related to cognitive activities by working on certain motivational structures, that will contribute to the assimilation of the desired material (Prokhorov et al., 2016; Valiullina, 2016).

In the framework of the study, we found out that some characteristics of reflection can contribute to the actualization of the desired cognitive states and motivational structures. Earlier, A.O. Prokhorov and A.V. Chernov created a technique that allows to distinguish three stages in the process of reflection (Prokhorov & Chernov, 2017). The first stage is the recognition of the object of reflection, the second stage is awareness, the third stage is identification.

DEVELOPMENT.

Methods.

The purpose of our study was to identify the structure of the relationship between motivational characteristics relating to learning, cognitive states, indicators of reflection and emotional

experiences in high school students with their different perceptions of a new topic proposed for study. In one case, the new topic is unclear (too complex, the teacher could not explain correctly, etc.), in another - it is clear.

The schoolchildren of the last year of study - the age of 17- 18 years, total 60 people (31 students are boys, 29 are girls). Psychological tests were used as a research method. For testing, a separate time was allocated, during which young men and women answered on questionnaire and psychological tests. The testing was conducted half a year before the end of schooling. For ethical considerations, the study was conducted incognito. Each subject was asked to remember for himself some personal life experience and focus on it, in the process of filling out the questionnaire. It was necessary to imagine yourself during the lesson, at which the new topic was not clear and during the lesson, at which the new topic was clear.

The following methods were used in the study:

1. Method of assessing the level of claims of the personality of VK Gerbachevsky (Gerbachevsky, 1970). The questionnaire is designed to determine the level of claims of the subjects that is represented by the sum of the motivational structure components of the individual. All indicators are divided into three groups. The first group includes indicators of the motivational structure of the individual (Table 3 (35-40)), the second group consists of components associated with a tendency to achieve rather difficult goals. These components refer to the current state at the time of testing (41-45). The third group includes indicators that allow to make an estimate of what the subject expects from the results at the end (46, 47). Finally, the fourth group includes indicators reflecting the understanding by the subject of the reasons for obtaining relevant results of the task and initiative in achieving the goals (48, 49).

2. The technique of reflexive processes: recognition, awareness and identification (Prokhorov & Chernov, 2015).

3. Scale of differential emotions by C. Izard (Izard, 1977).

4. Questionnaire "Degree of expression of cognitive states". The questionnaire was based on the list of cognitive mental states of AO Prokhorov and MG Yusupov. Students were asked to assess on a seven-point scale how much they express these states during the lesson, depending on whether the topic of the lesson is understood or not. They were offered two situations: 1) "You pass a new topic for you in the lesson, but what you are taught is not clear to you"; 2) "You pass a new topic for you at the lesson, and what you are taught is clear."

Below are the tables with a list of indicators used in the study.

Table 1. Cognitive mental states.

1	inspiration	9	bewilderment	17	self-observation
2	deep thoughtfulness	10	foolishness	18	boredom
3	thoughtfulness	11	puzzled	19	doubt
4	interest	12	insight	20	focus
5	cognitive dissonance	13	intuition	21	dullness
6	curiosity	14	foreboding	22	amazement
7	daydreaming	15	thinking	23	mental stress
8	Immunity	16	dissipation		

Table 2. Indicators of the scale of emotions (C. Izard)

24	deep interest	27	grief	30	contempt	33	wines
25	joy	28	anger	31	fear	34	coefficient of well-being
26	surprise	29	disgust	32	shame		

Table 3. Indicators of motivation and motivational factors (V.K. Gerbachevsky).

35	inner motivation	40	self-esteem motivation	45	assessment of possibilities
36	cognitive motivation	41	significance of the result	46	planned efforts
37	motivation of avoidance	42	the complexity of the job	47	expected results
38	the adversarial motivftion	43	volitional effort	48	the pattern of result
39	the motivation of the activity change	44	evaluation of study results	49	initiative

Table. 4. Reflexive processes (A.O. Prokhorov, A.V. Chernov).

50	internal recognition	52	internal awareness	54	internal identification
51	external recognition	52	external awareness	54	external identification

Results.

The results of a comparative analysis of the cognitive states expression degree and emotional states during the passage of a new topic in a lesson, which is perceived either unclear or clear presented in Table 5.

Table 5. Differences in the degree of expression of cognitive and emotional states in two training situations (Student's T-criterion).

N	Index name	X-average (unclear topic)	X-average (clear topic)	t	p
1	inspiration	2.47	3.55	-2.91	0.01
5	cognitive dissonance	3.30	2.45	2.79	0.01
9	confusion	3.50	2.65	2.70	0.01
18	boredom	3.93	2.32	4.30	0.001
21	stupidity	2.90	1.83	4.36	0.001
22	bewilderment	3.37	2.43	2.72	0.01
23	mental stress	3.62	2.60	3.57	0.001
25	joy	6.20	8.23	-5.09	0.001
26	surprise	5.12	6.50	-4.41	0.001
34	the coefficient of health	1.26	1.49	-4.06	0.001

Among the twenty-three characteristics of the cognitive states offered in the study, the most significant, in the clear and unclear training situations, were only seven - inspiration, cognitive dissonance, bewilderment, boredom, stupidity, confusion and mental tension. As expected, inspiration is intrinsic for a lesson with a clear theme, while other states are more characteristic of a lesson with an unclear theme. Among the ten emotional states offered in C. Izard's technique, only two were significant in the search for differences in the emotional perception of the proposed situations - joy and surprise

The existence of a diverse interdependence between the characteristics of motivation, indicators of reflection and cognitive states in the two proposed training situations shown on Table 6, 7.

Table 6. Correlation between cognitive and emotional states in two training situations.

unclear topic		**clear topic**					
		r=0.33 (p=0.01)		r=0.41 (p=0.001)			
N-N	r	N-N	r	N-N	r	N-N	r
1-31	0.35	1-24	0.45	4-34	0.61	18-34	-0.33
1-33	0.39	1-25	0.64	6-24	0.58	19-27	0.50
2-24	0.34	1-27	-0.45	6-25	0.55	19-29	0.33
3-24	0.35	1-34	0.64	6-27	-0.52	19-34	-0.38
4-24	0.45	2-24	0.48	6-28	-0.41	21-25	-0.38
4-25	0.34	2-25	0.45	6-29	-0.55		
5-24	0.52	2-27	-0.36	6-30	-0.43		
5-25	0.51	2-33	-0.34	6-31	-0.48		
5-34	0.38	2-34	0.55	6-32	-0.45		
6-24	0.47	3-25	0.44	6-33	-0.52		
6-25	0.54	3-27	-0.43	6-34	0.75		
7-24	0.42	3-34	0.38	7-34	0.39		
7-25	0.34	4-24	0.50	9-27	0.45		
16-33	0.36	4-25	0.53	10-27	0.44		
19-31	0.39	4-27	-0.47	10-34	-0.33		
22-24	0.40	4-29	-0.41	11-30	0.36		
22-25	0.37	4-32	-0.38	15-24	0.33		
22-29	-0.36	4-33	-0.37	18-27	0.53		

Table 7. Correlation of cognitive and emotional states with indicators of motivation and reflection.

unclear topic		**clear topic**			
r=0.33 (p=0.01)		r=0.41 (p=0.001)			
N-N	r	N-N	r	N-N	r
3-45	-0.35	1-52	0.33	23-41	-0.33
6-35	-0.38	5-45	0.34	25-38	0.35
6-39	0.33	9-43	-0.33	32-40	-0.33
11-40	-0.34	10-41	-0.35	34-52	0.35
12-40	-0.33	11-46	0.34		
28-43	-0.35	15-46	0.36		
29-52	-0.37	18-52	-0.33		
34-53	0.33	21-41	-0.35		

In both situations, cognitive states are closely connected to emotional experiences. Especially a lot of relationships in the second case, when a new topic taught in the lesson is clear. In the first situation (an unclear topic) the most significant, having a large number of interrelations are emotional states of "interest" and "joy". Both of them are directly connected with such cognitive states as thoughtfulness, interest, curiosity and amazement.

A small amount of joy and interest indicates a decrease in the level of all positive cognitive states. In the second situation, it is possible to identify at least seven characteristics that have many connections with other investigated indicators, according to which the overall cognitive-emotional system remains stable. Such characteristics include cognitive states - "inspiration", "interest", "curiosity", as well as emotions of interest and joy. The indicator of overall well-being plays a big

role in the process of understanding a new topic and a positive perception of the lesson. In addition, the emotional state of grief has a large number of links in the structure.

It was noticed that (Table 7) in the first situation, when the topic of the lesson is unclear, the motive for changing activities (in our case, the reluctance to study at school and, conversely, the desire to do something different from studying) is directly related to the cognitive state of "curiosity". With the same state found the inverse correlation of the "inner motive" indicator (the desire to understand better the topic of the lesson). As it turns out, in the process of new knowledge assimilation, which seem not very clear, an important role is played by the factor of assessing subjects' potential abilities in study. The higher student evaluates his potential for mastering a new complex material, the less experience of the cognitive state of thoughtfulness.

According to the data of the study (Tables 6, 7), too high subjective assessment of their abilities by a high school student reduces thoughtfulness, which in turn, can reduce interest in the proposed topic. A decrease of the interest in the topic of the session immediately causes a weakening of thoughtfulness, interest and curiosity, and a decrease in curiosity leads to a weakening of the motive for changing activities and to an intensification of the internal motive for understanding the topic of the lesson.

The reflection at the stage of awareness of one's own thoughts and feelings has an inverse correlation with the emotional state of disgust for the learning situation. Strengthening of this type of reflection at this stage generates a decrease in aversion to the learning process, then, along the chain, weakening of surprise experience, and experience of joy, curiosity and motivation for changing activities (weakening the desire to leave school). But, at the same time, strengthening the internal motive in learning (determining the meaning of getting an education for themselves).

If reflection is considered as an important factor promoting awareness of the learning process, in contrast to the first situation, in the second we see only the reflection of one's own thoughts and emotions at the stage of awareness.

Strengthening the reflection of one's own feelings and thoughts leads to an intensification of the cognitive state of "inspiration", this leads to an intensification of the experience of joy and, finally, to the actualization of the controversial motive in the process of learning.

Discussion.

The analysis of the interrelations between the indicators in two study situations allows us to assume the existence of peculiar compensatory systems that stabilize both the general experience of misunderstanding of the topic, after the primary awareness of its inaccessibility to logical comprehension, and the general experience of the conceptual understanding, after the primary awareness of its availability.

If the new topic seems unclear, two differently directed motives are included in the structure of interrelations: the motive for changing activities and the inner motive. In the case when the topic is clear in the lesson, the controversial motive and motive of self-esteem are included in the structure of relationships.

It seemed surprising that among the six motives relating to the training activity, considered in the methodology of V.K. Gerbachevsky, the two were not included in the correlation in either the first or the second situation. The cognitive motive - the interest in gaining new knowledge and the motivation for avoidance -the tendency to learn well, for the avoidance of conflicts with the teacher or parents. These motives were not associated with any of the cognitive or emotional states, and with the characteristics of reflection. We assume that further research will answer this question.

The results of the research allow us to assert that stimulation of inspiration in the classes of high school students in conditions of little understood information is unproductive.

At the same time, the emotional experience of joy and interest in an unclear topic contributes to a more thoughtful and attentive attitude towards it. If the new topic of the lesson is clear, inspiration greatly enhances the general mood and performance of the students.

Found that reflection is an integral factor that strengthens the existing structure of interrelations in both situations, but in the case when the topic of the lesson is perceived as "clear", only the reflection of inner, own thoughts and feelings is important, while in the situation of "unclear topic" external events, experiences, thoughts of surrounding people are included.

CONCLUSIONS.

The chosen direction – finding features and patterns in the structure of the relationships between the characteristics of learning motivation, reflection, cognitive and emotional states, and identifying differences in the structure of the relationships in the case of students' perception of new topics as unclear or clear, opens broad horizons for further research.

It was found that the primary perception of a new topic taught in the lesson is largely determined by the presence or absence of interest in it during the entire lesson. Revealed the characteristics of the educational motivation, due to which the initial impression of the proposed new topic, as unclear or, on the contrary, accessible to understanding, stabilizes. Found out the mechanisms by which it is possible to actualize the interest in the new subject among students, even if initially the theme seemed uninteresting and unclear.

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BIBLIOGRAPHIC REFERENCES.

1. Gerbachevsky, V. K. (1970). The Study of the Level of Claims in Connection with the Individual-Typical Characteristics of Emotionality and Intelligence: Author's abstract. diss. PhD. JL.
2. Ilyin, E. P. (2002). Motivation and Motives: A Tutorial. SPb, 512.
3. Izard, C. E. (1977). Human Emotions. New York, Plenum.
4. Leontyev, A. N. (2009). Psychological Basis of Child Development and Learning. Moscow.: Smysl, 426.
5. Leontyev, D. A. (2016). The concept of motive in A.N. Leontyev and the problem of quality of motivation. Bulletin of Moscow University. Psychology, 2, 3-18.
6. Prokhorov, A. O., & Chernov, A. V. (2015). Methods for Diagnosing Reflexive Processes: Recognition, Awareness and Identification. Psychology of mental states: a compendium of materials on the results of the 9th International Winter School on the Psychology of States. Kazan: Kazan University, 5, 122-126.
7. Prokhorov, A. O., & Chernov, A. V. (2017). Influence of reflection on students' cognitive states in the educational activity. The European Proceedings of Social & Behavioural Sciences, 665-672.
8. Prokhorov, A. O., Chernov, A. V., & Yusupov, M. G. (2015). Cognitive States in Educational Activity of Students: Structural-Functional Aspect. Asian Social Science, 11(1), 213-218.
9. Prokhorov, A. O., Chernov, A.V., & Yusupov, M. G. (2016). Features of semantic spaces of students' mental state image in dynamics of time. Mathematics education, 11(4), 489-498.
10. Valiullina, M. E. (2016). Interrelation of aggression with reflexivity and world image in students of the pedagogical profile as an opportunity to improve their psychological health. Mathematics Education, 11(4), 559-568.

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