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The influence of reflection on the effectiveness of self-regulation of students' mental state

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Abstract

The study results of self-regulation mechanisms of mental states and the development of regulatory abilities reveal stable regulatory functional complexes that perform a control function in ensuring the regulatory process in educational activities. The aim of the study is to reveal the effectiveness of mental states' self-regulation methods of students with different levels of reflection. The study sample consists of 68 first-year students of the Institute of Psychology and Education of Kazan Federal University. The research was carried out in the context of a seminar and a lecture. Students with high efficiency of self-regulation during the educational activity mostly experience states of calmness, interest and concentration. Students with a high level of self-regulation and high reflexivity often resort to such methods of self-regulation as the actualization of positive memories; they use active and passive release and passive rest. Found that students with a high level of self-regulation and a low level of reflection are less inclined to analyze their own actions. As a way of self-regulation, they often use active relaxation and actualization of positive images and memories, while students with a low level of self-regulation use self-hypnosis. The described research results will find application in the learning process since the revealed typical methods and techniques of mental states self-regulation of students with different levels of reflexivity should be taken into account when selecting methods and technologies for organizing educational activities.

Keywords: mental state, reflection, typology of self-regulation, effectiveness of self-regulation, learning activity.

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Introduction

In the process of educational activity, one of the most important conditions for self-regulation of cognitive states is the transfer of attention from the main activity to oneself with the help of reflexive processes. It makes it possible to influence educational activity. Therefore, one of the main functions of reflection is the regulation and control of activity which determines reflection as the most important component of consciousness in the regulatory process of mental states that arise in educational activity (Prokhorov & Chernov, 2015). Reflection plays an important role, having a direct impact on the functioning of the cognitive and motivational sphere of personality. A metacognitive mechanism performs the regulative function in the educational and cognitive activity of students.

The study of self-regulation mechanisms of mental states and the development of regulatory abilities is one of the most important tasks of modern psychology. This will make it possible to find out stable regulatory and functional complexes that perform a control function in ensuring the regulatory process. Previously, we studied the influence of reflection on the cognitive states of students during solving different creative problems (Shayakhmetova & Chernov, 2019). It confirmed the hypothesis of the reflective determination of cognitive states and their differentiated manifestation depending on various types of reflection during the performance of tasks for verbal and non-verbal creativity. Statistically significant data on the difference in the frequencies of the actualization of mental states of tension, dullness and perplexity, depending on the severity of the regulatory or content components of reflection was obtained. In another article, it is shown that the difference in parameters of value and attainability of students connect with the level of life meaningfulness (Salikhova, 2015). The total difference of these parameters in the personality value system is not associated with the level of life meaningfulness, and thus, the disparity may provide values with additional incentive potential and an internal conflict.

In addition, we investigated the relationship of mental states and cognitive processes in the course of educational activities of students (Prokhorov, Chernov & Yusupov, 2016). The most "sensitive" to interaction with mental states in the educational activity are the processes of attention. These indicators are significantly reduced in negative mental states of high and low intensity. The most resistant to the influence of mental states are the processes of memory and perception. During training sessions, their characteristics remain constant or improve. However, the mental mechanisms of regulation of mental states in the course of educational activity remain undetected.

Purpose and objectives of the study

The main aim of the study is to reveal the effective methods of self-regulation of mental states of students with different levels of reflection. Students were selected as respondents because an educational activity is most suitable for the manifestation of reflection. Here, the success of training largely depends on the ability of students to regulate negative mental states and to experience positive cognitive states.

The research is based on the hypothesis that there is a specificity of the reflection influence on the mental states of students in different forms of educational activity. Students with different levels of reflection prefer various methods and techniques for regulation of mental states in the course of educational activity.

Literature review

Models of self-regulation that exist today are based on the idea that internal, personal processes are the primary determinants of behavior. According to Dikaya (2003), mental self-regulation of states is a specific type of personality activity, which is characterized by certain relationships with professional activity. Its development determines the formation of adaptive personality traits, ensuring efficiency, reliability, performance and other characteristics of professional activity. The same features of self-regulation can be attributed to learning activities. Mental self-regulation is also an important "internal" determinant of the student's educational activity.

In modern psychology, researchers are most interested in metacognitive experience, represented by mental structures that allow for both involuntary and voluntary regulation of intellectual activity (Neff et al., 2007; Mitmansgruber et al., 2009). The considered metacognitive processes are associated with self-esteem (Vohs et al., 2005), attention to oneself, to one's health (De Ridder & Wit, 2006), self-control skills (Muraven & Slessareva, 2003). It should be noted that today the concept of self-regulatory learning is actively developing (Pintrich, 2000). This process includes motivational characteristics, setting goals, choosing a learning strategy, and regulating one's own behavior during learning activities (Calkins & Howse, 2004).

Despite all the advantages of the presented views on the regulation of mental states, they are focused on the psychological qualities of the personality. The least developed in these concepts is the mental component of the regulatory process. The relationship between the regulatory process and the structures of consciousness has not been sufficiently studied. Their contribution to changes in the state of the personality, their role and significance in the regulatory process has not been studied. Largely, this also applies to the regulation of cognitive states in the course of educational activity, where the level of students' reflection plays a key role.

Methodology

The study sample consisted of 68 full-time students, male and female, of the Institute of Psychology and Education (Kazan Federal University) (average age – 22 years old). The research was carried out in the context of a seminar and a lecture. The first sample included students with a high level of mental states' self-regulation efficiency, the second - with a low one. During the study, the lesson was interrupted, and the students answered the proposed questionnaires.

To solve the set of research tasks, we used the following questionnaires: 1. "The effectiveness of self-regulation of mental states (Nazarov & Prokhorov, 2018). It allows the evaluation of both the overall efficiency of self-regulation and the regulation of individual substructures of mental states. 2. "Typology of mental states' self-regulation" (Nazarov & Prokhorov, 2018). It is used to identify preferred methods of self-regulation and includes 8 types of self-regulation of mental states: passive rest, the actualization of positive images and memories, active release, thinking-reasoning, disconnection-changeover, communication, seeking of social support, taking responsibility. 3. "Relief of mental states of personality (short version)" (Prokhorov & Yusupov, 2011). The technique is aimed to diagnose the manifestation intensity of 4 main substructures of mental states: activity of behavior, the intensity of experiences, the activity of cognitive processes and intensity of somatic reactions. The questionnaire also allows identifying the average of 4 basic subscales. 4. Reflexivity questionnaire of Karpov and Skityaeva (2005). It allows measuring the general level of development of reflexivity, the severity of communicative reflection, as well as the level of reflection in different periods: reflection in the past, in the future and the actual reflection of personality.

To process the data we used descriptive statistical methods, frequency data analysis, correlation analysis (r-Pearson method). To identify the significant differences in mean values we used Student's t-test for unrelated samples. We also used the SPSS 18.0 program of mathematical and statistical analysis to process the obtained data.

Results

As a result of the study, it was revealed that students with high and low efficiency of self-regulation at lectures and seminars experience different mental states according to intensity and sign (Table 1).

Table 1. Mental states of students with high and low efficiency of self-regulation during the lectures and the seminars (frequency of choice)

№	Mental states of students at the lectures	Indicators	
		High efficiency of self-regulation	Low efficiency of self-regulation
1	Calmness	11	10
2	Interest	9	5
3	Concentration	6	3
4	Fatigue, boredom	4	9
	Mental states of students at the seminars		
1	Interest	6	2
2	Calmness	8	-
3	Concentration	4	-
4	Excitement	9	6
5	Fatigue, boredom	3	5
6	Stress	-	13

It was revealed that among students with high efficiency of self-regulation, at a lecture prevail mental states of calmness (37%), interest (30%) and concentration (20%), the mental states of boredom and fatigue are less common - 13%. In turn, among students with a low level of self-regulation efficiency, prevails calmness (37%), but there is a no less high percentage of boredom (33%). The state of interest revealed in 19% of students, and concentration – in 11%. As a result, the productivity of cognitive activity will be higher among students who are characterized by the high efficiency of self-regulation at the lecture.

Among students with high efficiency of self-regulation at the seminar, prevail mental states of excitement (31%) and calmness (28%). Interest is 21% of experienced mental states, while concentration, responsibility and boredom are around 10%. The seminar is an intellectual and emotionally intense form of educational activity associated with the independent preparation of the student, requiring deep involvement in the educational process. In this regard, students with low self-regulation efficiency most often have mental states of tension (46%), anxiety (21%), as well as fatigue and boredom (about 15%). The effectiveness of a student's educational activity largely depends on the mental states, which, in turn, are associated with the regulatory abilities of the individual. Note that students with low efficiency of self-regulation are dominated by negative cognitive states.

The next stage of the research analyzes the relationship between the level of reflection and the methods of mental states' regulation of students with high and low efficiency of self-regulation.

A high level of perspective and retrospective reflection is associated with the frequent use of techniques for actualizing positive images ($p < 0.001$). Highly reflective students often use communication ($p < 0.01$) and active release ($p < 0.001$) as methods of self-regulation of negative mental states, as well as passive release and passive rest ($p < 0.05$). That is, the higher their reflection on future actions, the more often they use such a method of self-regulation as the actualization of positive images, memories, active relaxation (dance, sports, outdoor activities, etc.) and communication. Less commonly, passive relaxation (crying) and passive rest (sleep, reading books, newspapers, etc.). Feedback tells us that the higher level of a student's future reflection development the lower their manifestation of behavior activity. In other words, the more often students think about the outcome of their actions, the more thoughtful and careful they behave, and vice versa, the more uncontrollably, inadequately they behave, the less often they think about the outcome of their actions.

A high level of students' current reflection development is associated with disconnection or shifting as a method for the regulation of mental states. The current level of development of reflexivity ensures the direct involvement of the student in the situation. It allows you to control and correct the course of the activity. Shifting is a way to change the direction of consciousness, the ability to shift consciousness to some interesting activity (favourite hobby, reading books, etc.). In turn, the level of communicative reflection is directly related to the active release. This type of reflection provides students with an opportunity to look at themselves from the outside, to see themselves through the eyes of others.

Note that students with a high level of reflexivity often use the actualization of positive images and active relaxation. In turn, a high level of activity of students' behavior in the classroom is associated with a lower overall level of reflexivity ($p < 0.05$).

The leading indicator in the regulation of mental states of students with low efficiency of self-regulation is the substructure of experiences. It is associated with passive rest and reflection ($p < 0.05$). The actualization of positive images is interconnected with the reflection in the past and such substructures as cognitive processes and behavior. Analyzing past activities, such students use positive emotions and images, ignoring the awareness and assessment of their mistakes. Students with low efficiency of self-regulation often use self-suggestion as a way of self-regulation, which students with high efficiency of self-regulation do not use.

Let us consider the reliability of the differences in the methods of self-regulation among students with low and high levels of reflexivity (Fig. 1).

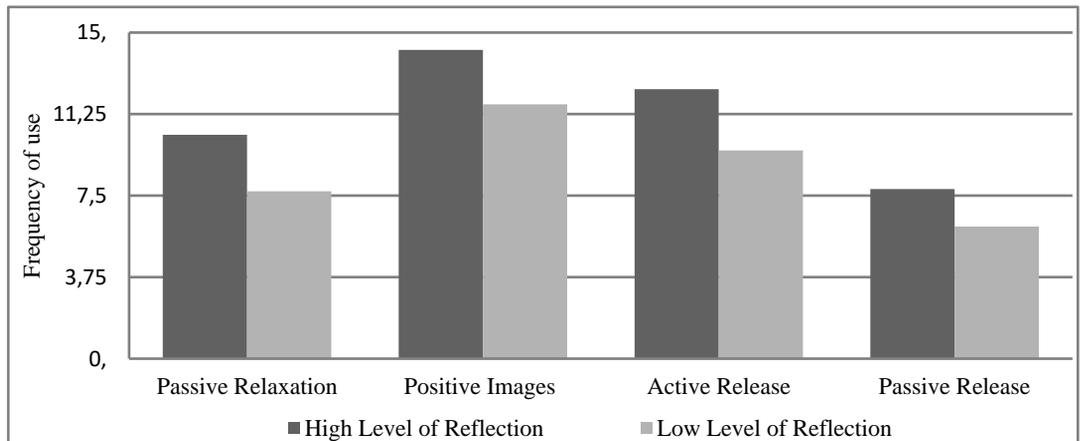


Figure 1. Methods of self-regulation of students with high efficiency of self-regulation and different levels of reflection

Students with a high level of self-regulation and a low level of reflection are less inclined to analyze their own committed actions. They do not think about the reasons for what is happening, and therefore it can be difficult to plan activities, set goals and predict results. Students with a high level of self-regulation and high reflexivity tend to control and analyze their own activities and the actions of others. They tend to plan and predict their activities.

Students with a high and low level of reflection resort to such methods of self-regulation as the actualization of positive images, memories, focusing on their positive experiences, use active relaxation (for example, dancing, arts) and passive rest (sleep, reading books, watching films, meditation, a favourite hobby), less often they use passive release (crying). The only difference is in the intensity of these methods of self-regulation. They are more pronounced in students with high reflexivity than in students with low reflexivity.

Experiences of students with a low level of reflexivity are more pronounced than those with a high level of reflexivity. Such students often feel sadness, boredom, have a certain attitude towards themselves, towards their actions. Thus, the level of reflexivity affects the characteristics and severity of experiences.

Discussions

The revealed results are of great importance and they complement the results obtained in our previous studies of the reflection influence on students' mental states in the course of educational activity. In the studies carried out within the framework of this topic, we studied the patterns of the reflection influence on the cognitive states of students in everyday and exam educational activities.

The results showed that reflection affects the modality, intensity and duration of cognitive states: these characteristics depend on the level of reflexivity of students, modality of mental states and situation of training (Prokhorov, Chernov, 2015). Considering this, we have developed a structural and functional model of students' mental states self-regulation. The model represents the structure of relationships between mental states and characteristics of consciousness (representations, reflection, experiences, semantic structures, mental experience) and external factors (situations, cultural space, lifestyle, time factors and social environment), as well as regulatory actions and feedback.

The entire regulatory complex is a constituent part of the subjective (mental) regulatory experience of a personality (Prokhorov, 2020). The inclusion of experience in situations of life is manifested in the actualization of the mental state of a certain quality, in the use of favourite methods and techniques for the regulation of mental states. These methods are worked out or spontaneously formed in the course of mastering activities and during life, in general. Different structures of consciousness form a functional complex, designed for the regulation of mental states of a certain quality, modality and intensity. It is formed according to specifics of complexes, consisting of mental states, methods and techniques of regulation and mental structures that are formed in the range of the current time and conditions of similar situations of life.

Subjective mental experience integrates the semantic structures of consciousness (personality meanings, values, constructs, semantic attitudes and orientations, etc.), mental representations which included in the structure of knowledge (associative, evaluative, conceptual, figurative characteristics), experiences, different structures of consciousness, reflection and its types, images and processes of understanding.

Another confirmation of the research results is the research of Kuhl (1987), which distinguishes action and state orientation as two alternative forms of self-regulation in difficult situations. His studies have shown that more action-oriented individuals realize more of their intentions than state-oriented individuals do. At the same time, they are less susceptible to the negative influence of situations that generate helplessness, are better able to increase the motivational attractiveness of an alternative that is meaningful to them, thereby facilitating decision-making. Finally, they are more optimistic about the expectations of success, are more involved in activities and do much better with complex tasks.

The works of Fleming (2014) identify several strategies that can support metacognition, including meditation and taking breaks during the study to reflect on one's own learning. Baird and colleagues (2014) examined the influence of meditation in studies. The study found that a two-week meditation program significantly improved metacognitive ability for memory as opposed to perception. These data indicate that, in at least some areas, a person's ability to introspect is flexible and can be enhanced through training.

Conclusion

In the course of educational activity, the mental states of calmness (37%) and interest (30%) prevail among students with high efficiency of self-regulation. Concentration (20%), as well as mental states of drowsiness and boredom, are represented in 13% of the respondents. Among students with a low level of self-regulation efficiency, calmness prevails (37%), and the state of boredom is less common (33%). Cognitive states of interest and concentration are experienced by 19% and 11% of students, respectively. Students with a high level of self-regulation and high reflexivity use such methods of self-regulation as the actualization of positive memories, active and passive relaxation, and passive rest.

It was found that students with a high level of self-regulation and a low level of reflection are less inclined to analyze their own actions. Note that among students with a high level of self-regulation, indicators of perspective reflection prevail the following: they focus on future activities, in contrast to students with a low level of self-regulation, who reflect on past situations. As a method of self-regulation, students with a high rate of self-regulation use active relaxation and the actualization of positive images and memories, and students with a low level of self-regulation effectiveness use self-hypnosis and reflection. The substructure of experience is higher in students with a low level of self-regulation and a low level of reflexivity. Students with a high level of self-regulation effectiveness have the following pattern: the higher the level of self-regulation, the lower the level of mental state reflection, and vice versa.

The practical significance of the study is that it can be used in pedagogical activities to regulate the mental states of students and teachers. The described research results will find application in the learning process since the revealed typical methods and techniques of self-regulation of mental states of students with different levels of reflexivity should be taken into account when selecting methods and technologies for organizing educational activities.

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