

Taking into account metacognitive and acmeological characteristics of professional thinking in educational environment¹

Dr. Kashapov Mergalyas, Professor

Psychology Faculty of the Yaroslavl Demidov State University;
E-mail: smk007@bk.ru

Учёт метакогнитивных и акмеологических характеристик профессионального мышления в условиях образовательной среды

Дпс.н Кашапов Мергальяс, профессор,

факультет психологии Ярославского государственного университета им. П. Г. Демидова;
e-mail: smk007@bk.ru

Abstract: *Analysis of metacognitive and acmeological approaches to understanding characteristics of professional thinking in educational environment. Methodological substantiation of the key points of the concept of acmeological professional thinking of a subject: substantiation of the criterion characteristics of the formed professional thinking of a subject; definition of most important for efficient professional thinking ties with personal peculiarities of a subject; identification of basic acmeological regularities for reaching professional thinking maturity; pointing out the over-situational nature of thinking as a leading quality in the creative thinking structure of a professional. It is the definition of over-situational problems that is the basis of creative thinking, which has a set of key qualities of personality, needed for transformation of oneself as a subject of activity.*

Key words: *educational environment, metacognitive and acmeological approach, professional thinking.*

Резюме: *Проведен анализ метакогнитивных и акмеологических подходов к пониманию характеристик профессионального мышления в условиях образовательной среды. Представлено методологическое обоснование ключевых положений концепции акмеологии профессионального мышления субъекта: обоснование критериальных показателей сформированности профессионального мышления субъекта; определение наиболее значимых для эффективного профессионального мышления связей с личностными особенностями субъекта; выявление основных акмеологических закономерностей достижения профессиональной зрелости мышления; выделение надситуативности мышления*

¹ Work done with financial support of RGNF (Project No.10-06-00459a)

Taking into account metacognitive and acmeological characteristics of professional thinking in educational ...

как ведущего качества в структуре творческого мышления профессионала. Именно обнаружение надситуативной проблемности служит основой творческого мышления и характеризуется набором ключевых качеств личности, необходимых для преобразования себя как субъекта деятельности.

Ключевые слова: образовательная среда, метакогнитивный и акмеологический подход, профессиональное мышление.

Educational medium creates conditions for working out your own positive experience. Rich educational medium emerges when the student wants to acquire something for himself. The quality of education is connected with positive changes of inner condition. It is necessary to make these changes structural components of your consciousness. The essence of a joint conscious activity is its projectivity (building the future from the point of view of a student). If educational medium is a system of possibilities, the designing the medium is designing possibilities taking into account characteristics of professional thinking of future professionals.

If the society, according to B. G. Ananyev, underrates human intellect, this society has no future. Being an adult is not a stationary condition, for there are periods of ups and downs. In order to avoid the downs and crisis conditions, it makes sense to use psychological mechanisms while managing psychic development in educational conditions. By psychological mechanisms we mean a system of various conditions, means, relationships, ties and other psychological phenomena, regulating the development of qualities, including intellectual qualities.

Theoretical and practical issues of professional thinking attracted the attention of many researchers (O. S. Anisimov, D. V. Vilkeyev, I. I. Kazimirskaya, V. D. Shadrikov, Yu. K. Kornilov, Yu. N. Kulyutkin, A. K. Markova, L. M. Mitina, N. V. Kuzmina, L. P. Urvantsev). Analysis of modern theories deepens our understanding of the nature of professional thinking, primarily thanks to research in the field of fundamental working out of general theoretical issues of psychology of thinking (A. V. Brushlinsky, J. P. Guilford, A. M. Matyushkin, V. A. Molyako, Ya. A. Ponomaryov, J. Renzulli, S. L. Rubinstein, R. Sternberg, O. K. Tikhomirov, E. P. Torrance, M. Wertheimer); issues of general and special intellectual abilities (M. I. Volovikova, V. N. Druzhinin, V. A. Krutetsky, N. S. Leites, B. M. Teplov, V. D. Shadrikov, A. N. Voronin, V. Vollakh, S. Mednik). Research of efficient means and methods of the development of creativity is also of considerable interest (G. S. Altschuller, O. S. Anisimov, Yu. D. Babayeva, D. B. Bogoyavlenskaya, D. V. Vilkeyev, I. I. Ilyassov, V. Ya. Lyaudis, A. M. Matyushkin, M. A. Kholodnaya, D. V. Ushakov, V. S. Yurkevich, T. V. Ogorodova); as well as procedures for self-development of intellectual gift (E. D. Telygina, D. Chartier, E. Loarer, Yu. Z. Gilbukh, Ye. V. Kotochigova); as well as principles and specific character of division into age periods of creative development of personality (L. S. Vygotsky, V. V. Davydov, V. N. Druzhinin, V. I. Slobodchikov, J. Bruner, J. Piaget, E. Erikson, J. Raven, M. Yuto, E. Rubinof); genesis of creative thinking under professionalization conditions (V. D. Shadrikov, B. B. Kosov, T. G. Kiselyova, Ye. V. Kotochigova, T. V. Ogorodova, Yu. V. Poshekhonova).

There is not enough researches, though (A. K. Markova, L. M. Mitina, V. I. Panov, N. V. Kuzmina, A. A. Rean, Yu. N. Kulyutkin, M. K. Tutushkina, V. A. Yakunin etc.),

Taking into account metacognitive and acmeological characteristics of professional thinking in educational ...

dedicated to bringing up a creative thinking professional ready for discovering and acquiring new knowledge. It is worth mentioning, that in solving the problem of actualization and organization of efficient professional thinking empiric research still prevails, based on training approach, giving information on inefficient conditions of professional thinking functioning and ways to improve it. The analytic attitudes of such research does not allow for considering real conditions for actualization of creative potential in professional activity, diminishes its scientific and practical value, contributing to further accumulation of separate, not generalized data. And those few unsystematic researches of the given problem (O. S. Anisimov, A. V. Brushlinsky, D. V. Vilkeyev, D. N. Zavalishina, T. V. Kornilova, Yu. N. Kulyutkin, A. M. Matyushkin, O. K. Tikhomirov, V. I. Slobodchikov, M. A. Kholodnaya, D. V. Ushakov) cannot cover all the range of problems in that field.

Formation of professional thinking of a subject seems to be a problem without purposeful research of its metacognitive and psychological basis, for, first, the knowledge of basic characteristics of mature thinking of a professional allows for transformation of the process of his perfection into the process of self-perfection. In that case, a professional, while acquiring metacognitive knowledge and strategies, becomes the subject of his own thinking. Second, comprehending the metacognitive basis allows for discovering basic psychological regularities and mechanisms of professionalization and socialization of thinking of a subject and specific ways of reaching professional and social maturity of thinking. Such an approach would contribute to decreasing the number of stages of a subject's professionalization (adaptation, option, identification etc.). Third, realization of the metacognitive approach would allow a professional to rise over the situation. For that, we have to find things in common between the elements of the situation in question, including the conflicts arising in the professional activity, and the elements of the discovered problems.

In the interactionism theory (N. Endler, D. Magnusson, A. Bandura, G. H. Mead, Ch. Cooley, J. Baldwin, G. Caux A. Garliche I. Lund) cognitive variables are seen as mediators between the situation and behaviour. In such an interactionistic model the comprehension (or creation) of the world is an independent variable, while behaviour is a dependent one. The cognitive approach (D. Norman, P. Lindsay, P. S. Lazarus, G. Kelly, J. Rotter, U. Neisser, J. Dewey, R. L. Solso, R. Sternberg, R. K. Wagner, J-F. Richard, A. Weill-Fassina, P. Rabardel, D. Dubois), the main and immediate predecessor of which was C.L.Hull, presents theoretical views on understanding of interaction between man and environment. Originally, the basic task of cognitive psychology was studying the transformation of information between the signal reception and response.

The metacognitive approach (J. Flavell, A. Brown, G. Wellman, M. Lefebvre-Pinard, W. Shneider, M. Pressley, B. Campione, X. Lin) has formed the idea of a class of regulation metaprocesses, as a special substructure of the information processing system. Metacognitivism began with the first published work of J. Flavell on meta-memory (1971). The publication of this work triggered experimental research of metamnemonic processes, the results of which led researchers to the issue of meta-thinking and conscientious regulation of comprehensive processes as a whole.

Taking into account metacognitive and acmeological characteristics of professional thinking in educational ...

Meta-thinking is treated by representatives of this approach (Capeling, Keller, Flavell) as a process of thinking regulation. A. Brown and G. Wellman, researching meta-thinking, name its main functions, like control over thinking processes, their planning, regulation and concordance. These processes appear and function in the conscientious activity depending on the hardness of the task and specific motivation of a person towards its solution. In his later works G. Wellman pointed out four groups of phenomena matching the definition of "meta-thinking":

1. Constant knowledge of a person about thinking tasks, processes, strategies etc., which J. Flavell calls metacognitive knowledge, and G. Wellman calls the human soul theory.

2. Knowledge of the condition, contents and limits of your thinking, which Flavell calls metacognitive experience and G. Wellman calls cognitive following.

3. Regulation and control over the processes and strategies of thinking.

4. Conscientious emotions following the process of learning (J. Flavell calls these processes cognitive experience).

Many similar theories have the following drawbacks:

1. Fragmentariness (situations are viewed beyond continuity context, and thinking is viewed less as a process).

2. Absence of objective and subjective showings of actualization of professional thinking, for the comprehension and reflexion of a problem situation arising and its solution process are hard to understand and to be realized by a subject.

3. Dividing the ways of solving a difficult situation into productive and unproductive ones puts off the effect of creative thinking of a professional.

Still, the analysis of many theories of professional thinking allows pointing out certain prospects:

✓ While searching for an integral approach, one might choose the psychology of the subject (A. V. Brushlinsky, A. L. Zhuravlyov, V. D. Shadrikov, V. V. Znakov, Ye. A. Sergiyenko).

✓ Man as a subject keeps developing gradually. The basis for longitude evaluation of the changes dynamics in all structural-functional characteristics of professional thinking (start, progress, bifurcation and success) is given in the works of B. G. Ananyev, Ye. I. Stepanova, Yu. N. Kulyutkin, A. I. Kanatov.

✓ Personality gives the direction, while the subject chooses the means to reach the set goal (Ye. A. Sergiyenko). Personality is the holder of the contents of the inner world of a person. A subject realizes his inner world in his actions.

✓ The maturity of professional thinking is viewed as the concordance between personality and subject (D. N. Zavalishina, M. A. Kholodnaya, V. I. Panov, V. A. Bodrov). Therefore, it is the level criteria, grounded within the framework of the subject approach (V. V. Znakov, 2009; Ye. A. Sergiyenko 2000, 2006; A. O. Prokhorov, 2009), that allows to pass on to understanding the integrity of man, including him as a subject of thinking activity.

Integration of modern metacognitive and acmeological approaches enables a deeper understanding of the nature of professional thinking and substantiating new

Taking into account metacognitive and acmeological characteristics of professional thinking in educational ...

prospects for research in this field. Acmeological School is to formulate new, social models of adaptive and productive human behaviour. Thus, in 1928 N. A. Rybnikov put forward a task to work out a section of psychology dedicated to the psychology of adults and named it "acmeology", which he defined as science of a mature person development, as opposed to paedology, science about children. Already in 1920s he worked out an idea of flourishing of creative abilities of man. At the same time, M. M. Rubinstein tried to substantiate personal features of a teacher providing for the success of his professional work. M. M. Rubinstein believed that creativity is the basis for professional qualities, for striving for perfection presupposes going beyond usual thinking schemes and actions. B. G. Ananyev said that only a talented person could see and support talent in others. One can only become a great personality only through being the subject of his own actions and biography. In 1955 in «Psychological Affairs» No.5, B. G. Ananyev put forward an idea of working out psychology of adults. In 1965 B.G.Ananyev began a complex research of psychological functions and processes. It was established that mnemonic functions develop faster than logic functions. The thinking of adults is being reconstructed both in components and in kinds. At the age of 25, 33 and 37, all kinds of thinking are at the same development level.

Acmeology has become a new branch of science dealing with psychophysiological, social and professional maturity of man consisting of a number of development phases, not only preceding, but also opposing involutinal processes (B.G.Ananyev, A.A.Bodalev, N. V. Vishnyakova, A. A. Derkach, N. V. Kuzmina, Yu. N. Kulyutkin, A. K. Markova, T. I. Mironova, A. A. Rean, N. P. Fetiskin, S. D. Pozharsky, L. Ye. Pautova etc.). Acmeology is discovering phenomenology, regularities and mechanisms of human development at the adult phase, as well as conditions for reaching an optimum in that development.

The prospects for studying acmeological approach towards comprehension of a subject's thinking are given in the works of L. I. Antsiferova, A. A. Bodalev, A. K. Markova, B. G. Ananyev, N. V. Kuzmina, Yu. N. Kulyutkin, A. A. Rean, N. F. Vishnyakova, A. A. Derkach, V. G. Zazykin etc. In the process of professional thinking formation the important thing is knowledge of regularities of his thinking formation in the period of his flourishing, considering changes in the whole complex psychological structure of man as individual, personality, ipseity and subject.

Issues of professional thinking were the subject of research of O. S. Anissimov, V. P. Bransky, V. G. Zazykin, A. P. Sitnikov. They defined it primarily as a practical thing aimed at solving specific tasks. These authors point out the features of professional thinking which is typical of practical thinking, i.e. calculation and ability to see main stages, foresee things and make new decisions quickly, bring them into accord with the means available at the moment. At present, the most intensively developed branch of acmeological science is acmeology of the professional activity subject (K. A. Abulkhanova-Slavskaya, N. V. Kuzmina, G. I. Marassanov, G. S. Mikhailov), where the main issues are those of professionalism and level of activity, as well as technologies of their improvement.

There have been a number of researches dedicated to the issue of development (formation) of professional thinking in the context of various kinds of cognitive competence. The most famous works in this field are those of A. A. Bodalyov (1965, 1982, 1983), Yu. N. Yemelyanov (1985), Yu. M. Zhukov (1988, 1990). In the field of acmeology and

Taking into account metacognitive and acmeological characteristics of professional thinking in educational ...

psychology of professional activity certain aspects of intellectual competence were reflected in the works of N. N. Yershova (1997), A. S. Gusseva (1997), A. A. Derkach (1994, 1996), N.V.Kuzmina (1990), A.K. Markova (1990, 1996), I.N.Semyonov (1996), A. P. Sitnikov (1994), S. Yu. Stepanov (1996) etc. Their works describe acmeological type of thinking in detail. Solving the problems and tasks of development of professional thinking of a subject is successfully done within the framework of acmeographic approach, as a system of psychological-acmeological principles and methods. The nucleus of acmeographic approach to understanding maturity is acmeographic descriptions and acmeogrammes worked out by V. G. Zazykin.

The aim of our work is to create acmeological concept of professional thinking of a subject. The general goal may be specified in the following tasks:

1. Working out conceptual instrument for discovering and describing acmeological characteristics of professional thinking of a subject.

2. Analysing basic levels of professionalization of a subject's thinking.

3. Working out psychological structure of thinking of a subject, who has reached acmeological summit of his professional and personal maturity.

4. Defining the indices of the formed mature professional thinking of a subject.

5. Researching acmeological and psychological mechanisms and regularities of professional thinking of a subject under various working conditions (labour – teachers, psychologists, managers, lawyers, doctors, musicians, army men; sport – representatives of different sports).

6. Working out and testing methods for diagnosing acmeological and psychological characteristics of professional thinking of a subject.

7. Working out and testing author's educational programmes, aimed at perfecting a subject's thinking under the conditions of professionalization and socialization of personality.

Acmeology of professional thinking of a subject is aimed at discovering the "intersection" of ups and downs, as well as defining their regularities. Based on these regularities, it constructs optimal models, algorithms and technologies, defines conditions and factors of their productive vital activity and provides acmeological following of work and life of a subject or a whole professional team. The issues of procedures, dynamism and genesis of integral system of professional thinking, as well as the issues of interrelationship of this system with other, wider meta-systems, of the role of various objective and subjective factors in the organization of its optimal functioning, are yet to be solved, despite numerous researches held within the framework of various scientific schools. All this denotes the lack of conceptual working out of professional thinking issue. Modern researchers view the dynamics of separate components of professional thinking or its united structures upon reaching certain results. At the same time, fixing all the attention mainly on the resulting aspect of a professional's thinking means that these models, due to the complexity of the issues, leave lots of problems for prospective research. The necessity to integrate these approaches is becoming evident, which will allow for discovering new possibilities for investigation and formation of professional thinking of a subject.

Apart from widely used methodology, original author's methods were used in the research:

- ✓ Method for defining the creative activity of a teacher, by O. N. Rakitskaya, M. M. Kashapov.
- ✓ Questionnaire «Motivational-cognitive component of abnotivity» by M. M. Kashapov, A. A. Zverev.
- ✓ Questionnaire for finding out situational/over-situational level of pedagogical thinking (M. M. Kashapov, T. G. Kiselyova).
- ✓ Questionnaire on creative personality abilities (O. A. Shlyapnikova, M. M. Kashapov).
- ✓ Questionnaire for defining creative potential, by O. N. Rakitskaya, M. M. Kashapov.
- ✓ Method for self-evaluation of metacognitive knowledge and metacognitive activity (M. M. Kashapov, Yu. V. Skvortsova).
- ✓ Method «Diagnosing the main type of reaction» (M. M. Kashapov, T. G. Kiselyova).
- ✓ Test «Polysemantic words» (T. V. Ogorodova, M. M. Kashapov).
- ✓ Method «Evaluating creative thinking of pre-school teachers» (Ye. V. Kotochigova, M. M. Kashapov).
- ✓ Method of diagnosing motivation for scientific activity (T. V. Ogorodova, Yu. S. Medvedeva).
- ✓ «Abnotivity of secondary school teachers» (M. M. Kashapov, A. A. Zvereva).
- ✓ «Abnotivity of college professors» (M. M. Kashapov, A. A. Adusheva).

We see professional thinking as the highest learning process of searching for, discovering and solving problems, discovering and transforming hidden properties of reality not shown on the outside. Realization of the acmeological approach analysis is aimed at methodological substantiation of the key moments of the acmeology of professional thinking concept. Such an approach allowed us to: a) point out criterion showings of the professional thinking of a subject formation; b) define the ties with personal peculiarities of a subject, most significant for efficient professional thinking; c) discover basic acmeological patterns for reaching professional maturity of a subject's thinking. Working out psychodiagnostic methods in accordance with our acmeological concept of professional thinking allowed us to investigate formal and meaningful elements of a problem professional situation. One of the bases of the concept worked out by us is discovering and describing levels of maturity of professional thinking as a learning and transformation process. Our system of acmeological analysis of the functioning principles of the mature professional thinking allowed us to describe problems as a unit of analysing creative thinking of a professional, for problems have the main properties and functions of professional thinking of a subject. At the same time, problems are the genetic basis for actualization and formation of professional thinking of a subject.

The methods of psycho-diagnostics worked out by us (more than 20), as well as methods of dynamic modelling («Script method» etc.), let us establish the functioning mechanism of over-situational level of professional thinking (M. M. Kashapov, 1991). These methods, based on the process of recognition, reflection and situation, classification contribute to switching over to productive activities. Having acquired the mechanism of switching from situational level of professional thinking to over-situational level, a creative

Taking into account metacognitive and acmeological characteristics of professional thinking in educational ...

professional would start thinking from meta-position. Thanks to that change, a productive successful completion of the situation is reached. Reversibility of thinking means an ability to think rising over the situation in question, from the end to the beginning, from the debut to the final. Through actualization of such mechanism, one can come to productive kinds of activities. Being oriented towards new and positive, as our research shows, makes the difference between efficient and inefficient professional (M. M. Kashapov, 1989; Ye. V. Kagankevich, 2009, T. G. Kiselyova, 1998; Ye. V. Kotochigova, 2001; A. V. Leybina, 2008; T. V. Ogorodova, 2002; O. N. Rakitskaya, 2007; I. V. Serafimovich, 1999; Yu. V. Skvortsova, 2004, S. A. Tomchuk, 2007 etc.).

Knowing the psychological nature of creative thinking mechanisms allows for a more adequate view on the criteria of their formation. The principles of creative thinking have something to do with the formation of metacognitive regulation mechanisms of intellectual activity. Taking these principles into account allows for working out a general approach to investigation and formation of creative professional thinking.

Therefore, one of the methods of investigation and formation of thinking mechanisms defining the success in reaching the top of professional activities is metacognitive analysis of the developing reflection by a specialist of the situation of his activity (through the analysis of how the knowledge of it is represented in his mind). Using such analysis makes it possible to note out that the efficiency of archeologically and metacognitive mechanisms are higher when they are integrated.

Reference/Литература

1. Investigating pedagogical thinking // Edited by M. M. Kashapov. M.: Published by «Institute of Psychology of the Russian Academy of Science», 1999. 136 pages.
2. Kashapov M. M. Psychology of pedagogical thinking / Monograph. – St Petersburg: Aleteiya Publishers, 2000. – 463 pages.
3. Kashapov M. M. Psychology of creative thinking of a professional. Monograph. M.: PER SE. 2006. 600 pages.
4. Kashapov M. M. Perfection of creative thinking of a professional. Monograph. M.-Yaroslavl, MAPN, 2006. 313 pages.
5. Kashapov M. M. Stages of creative thinking of a professional. Monograph. Yaroslavl, Remder. 2009. 380 pages.
6. Kashapov M. M. Acmeology. Yaroslavl: Yaroslavl State University, 2011. 112 pages.
7. Ogorodova T.V. Acmeologic basis of pedagogical activities. Yaroslavl: Yaroslavl State University, 2010. 116 pages.
8. Psychology of pedagogical thinking: theory and practice // Edited by M.M.Kashapov. M: Published by «Institute of Psychology of the Russian Academy of Science», 1998. 149 pages.
9. Psychology of pedagogical thinking: theory and experiment // Edited by M.M.Kashapov. M: Published by «Institute of Psychology of the Russian Academy of Science», 1998. 152 pages.

Taking into account metacognitive and acmeological characteristics of professional thinking in educational ...

10. Psychology of professional pedagogical thinking // Edited by M. M. Kashapov. M.: Published by «Institute of Psychology of the Russian Academy of Science», 2003. 398 pages.

11. Skvortsova Yu. V. Metacognitive basis of professional activities / Textbook. Yaroslavl, Yaroslavl State University, 2008. 105 pages.

Formation of pedagogical thinking // Edited by M. M. Kashapov. M.: Published by «Institute of Psychology of the Russian Academy of Science», 1999. 143 pages.