

## Critical Thinking Development in Students During College Education Process

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### Abstract

Currently one of the significant issues of education is critical thinking development in prospective specialists in the conditions of professional education. There is a well-timed need in training prospective specialists, who meet the requirements of accelerated economic, social and political modernization, which orients the education system on critical thinking development because modern education has to provide the integration of personality with well-developed understanding of the world and life perspective in the global culture. The ability to think critically becomes one of the main ones in professional education system and allows the college students to navigate quickly and correctly in their future applied activity, to flexibly adapt in the world of business and science and the new system of education and management. Because of this higher education system presents the need of creating the conditions for the development of critical thinking as one of the most significant components in professional competencies structure in the prospective specialists.

critically assessing the surroundings. Mastering the skills of critical thinking prepares them for the applied activity, for the ability to foresee and consider the social changes, to see the changes in technology and production management and to analyze the progressive shifts in the cultural life and scientific fields. Critical thinking helps them to adapt to market economy and to develop business skills and professional competence. Having critical thinking is a necessary quality for a modern college graduate, regardless of their specialty. However, it is especially essential for teachers, psychologists, political analysts, managers and engineers, because in their professional activity critical thinking provides generation of efficient solutions and ideas and creation of new technologies.

Critical thinking development in modern college students allows prospective specialists to successfully master the bases of their future profession and to be prepared to live and work creatively in the conditions of XXI century. Orientation to the future is the key idea of professional education. Its implies that one of the main goals of the education system should be the goal of developing in the prospective specialists critical thinking, critical point of view, ability to critically evaluate everything (first of all, the results of their own activity and the activity of their colleagues), as well as ability for teamwork and cooperation for reaching the united goals. Because of this, the task of professional education modernization is related to critical thinking development in students as prospective specialists through expanding the borders of an integral education process by using information and communicative technologies, new interactive education methods and teamwork tools in the education process conditions, which reflects the students' participation in various updated directions of professional education with regard to the traditions of national higher school.

**Keywords:** Critical thinking; Critical thinking development in students; Higher education; Professional education.

### Introduction

In the conditions of democratic society and market economy, when the interests of a personality, employers and the state often contradict each other, prospective specialists are able to maintain the traditions and experience and influence the process and the results of social and economic reforms, aimed at the country and society development, by

## Methodology

During the conduction of the study we used the following types of methods: theoretical (*analysis, synthesis, classification, generalization*, deduction, induction, analogy and modelling); *empirical* (observation, survey, questionnaire and interview); *experimental* (stating, developmental and diagnostic experiment); *statistical* (statistical analysis of the data, qualitative and quantitative analysis of the study results).

Methodologic basis of the study consists of modern education frameworks, fundamental statements of higher education pedagogics [1,2,3], theory of professional education [4-6], theory of professional competencies development [7-10], theory of critical thinking [11-15], and theory of professional activity [16-19]. The study also references the governmental documents (The concept of Higher Pedagogical Education of the Republic of Kazakhstan, 2005; The concept of continuous pedagogical education of the teacher of new formation of the Republic of Kazakhstan, 2005; The Law of the Republic of Kazakhstan "About education", 2007), scientific works on the studied problem by national and international researchers, periodic editions of Kazakhstan and other countries, proceedings of scientific and applied conferences, educational programs, educational and methodic books.

## Results

### Theoretical part of the study

A significant aspect of the scientific and methodologic aspect of present study is defining the essential characteristics of the main concepts: critical thinking, critical personality and critical society. Based on the conducted theoretical analysis we generalized the definitions of these concepts.

*Critical thinking* is a disciplined, self-directed and self-regulated thinking, which illustrates the thinking perfections, correspondent to the specific way or field of thought. Critical thinking presents in two forms. If it has been trained (disciplined) to provide for the interests of a specific individual, excluding other appropriate people or group, it is called sophisticated or weak essence of critical thinking. If it has been trained (disciplined) to take into account the interests of various people or groups, it is called rightful or strong essence of critical thinking.

*Critical personality* is somebody that mastered the range of intellectual skills and abilities. If a person uses intellectual abilities to reach his own egoistic goals, this person is a critical thinker only in a weak or limited sense. If a person uses these abilities rightfully and with understanding of other existing opinions, this or she is a critical thinker in a strong or the most complete sense. Critical society is a society that rewards the commitment to critical thinking values and, therefore, does not use ideology and suggestion as the main way of education (it rewards reflective questioning, intellectual independence and valid non-conformity).

Modern psychological and pedagogic studies show that the problem of critical thinking development in students during the education process is highly multi-aspect. Each student uses meanings, ideas, paradigms, analogies, metaphors, models, theories and explanations even for expressing the flow of their own thoughts in order to understand, think and regulate their own thoughts. They also use meanings and concepts in order to deny, contradict, distort, create stereotypes, etc. Psychologists note that often the way of thinking might be described in such criterions as vivid, accurate, adequate, successive, deep and honest. But often thinking may also be inaccurate, undefined, inadequate, shallow, trivial and biased.

Studies of pedagogues-psychologists reveal that didactic lectures, wide range of content and pointless memorizing are combined with students' passiveness in order to consolidate thinking of lower level, and students' education is associated with secondary school. When students do not actively comprehend the ways, which lead them the conclusions, when they do not have discussions with teachers and other students, when they do not learn the variety of opinions, do not analyze the paradigms, theories or their own explanations, do not actively doubt the meanings and essence of the studied material, do not compare what they learn with their experience, do not solve unusual problems and do not make suggestions or collect the facts, they do not reach a higher level. They finish their education with unordered fragmented opinions, strictly learned procedures and chaos of concepts. They obtain a little knowledge or comprehend little. They are well-trained and not educated; they are not critical thinkers or personalities. As a result, their ability to adapt and to learn in a work environment and in life is highly limited. Their ability to grow intellectually and morally and their learning motivation are weak. Modern psychological theory defines critical thinking as a search for common sense, as an ability to think and act logically with regard of both one's own opinion and other opinions, and as a skill to neglect one's own prejudices. Studies show that critical thinking, which is able to propose new ideas and see new opportunities, is highly essential during solving various problems [20]. Furthermore, it is necessary to reveal the prejudices, pass the knowledge to one another and evaluate the influence of this knowledge on the solution of the problem. Critically thinking person is faced with the questions: "What do I know? What new have I learned? How did my knowledge change? What am I going to do with it?"

Philosophy Association defines critical thinking as "goal-directed, self-regulating statement, which ends in interpretation, analysis, evaluation and interactivity, as well as with explanation of the obvious, conceptual, methodologic or contextual thoughts, on which this statement is based"[21]. Human's critical thinking is usually related to curiosity, good level of education, reason of trust, non-biasness, flexibility, rightfulness in evaluation, honesty in conflict with personal prejudices, sensibility in statements, urge to rethink, clarify the problems and difficult questions, accuracy in the necessary information search, mindfulness in criterions choice, consistency in search for the results, which are as accurate as the used sources. This combination relates the critical thinking ability with the understanding of rational and democratic

society bases. Critical thinking is characterized by building logical statements, creating corresponding logical models, accepting verified solutions about rejecting any of the statements, agreeing with it or postponing its analysis for some time and evaluation of the thought process itself (the way of thinking, which lead to our conclusions, or the factors, which we regarded during making the decision)[22].

In Pogrow's opinion, critical thinking is rational, reflective thinking, which is directed at solving the question of what should be trusted or which actions should be made [23]. In such definition critical thinking includes skills (abilities), as well as predispositions (affirmations). To think critically means to demonstrate curiosity and to execute successive search for answers. Critical thinking works at many levels with fact not being enough, revealing the reasons and the consequences of these facts. Critical thinking implies polite skepticism, doubt of the conventional truth and means the creation of an opinion on a certain question and the ability to defend this opinion with logical statements. Critical thinking implies attention to the opponent's statements and their logical comprehension. Critical thinking is not a separate skill or ability, but rather a combination of many abilities. In his work Carlson writes: "Critical thinking is a sequence of intellectual actions, aimed at evaluating statements and systems of statements in order to reveal their inconsistency with the accepted facts, norms and values. There are several levels of critical thinking, each of which has its own type of arguments characterized by different proportions of logical and cognitive components: 1) empiric level -critical evaluation of the facts; 2) theoretic level-critical evaluation of the theories; 3) meta-theoretic level-critical evaluation of norms and values"[24].

Baron states: "One of the main traits of critical thinking is a necessary presence of transcendental reflectiveness, which requires the thinking subject to have a self-report on which conscience function calls for the use of thinking: for axiological orientation, for cognition or for the search of goal-reaching tools"[25]. According to Cassel and Congleton, "critical thinking implies the presence of reflective skills about one's own thinking activity, the ability to work with concepts, statements, conclusions and questions, development of skills in analytic activity, as well as in evaluation of the similar opportunities of other people. Critical thinking commonly has applied orientation. Because of this it can be understood as a form of applied logic, which is viewed inside and in dependence from the statement context and thinking subject's individual traits"[26]. Smith states: "The mechanism of critical thinking includes thinking operations, which define the statement and argumentation process: goal-setting, revealing of the problem, proposing the hypotheses, gathering the arguments, their verification, predicting the consequences, accepting or rejecting the alternative opinions. It includes the ability to use basic intellectual skills (knowledge and understanding) for synthesis, analysis and evaluation of the complex and controversial situations and problems. It includes the ability to reveal a problem, clarify the situation, analyze the arguments, thoroughly study of the issue, develop the evaluation criterions for the decisions and information sources reliability and avoid generalizations"[27]. King provides the

following definition: "Critical thinking has a reflective nature and is related to communication and psychology of personality. It is related not only to the cognitive, but also to motivational fields and self-consciousness. When we deal not with people's thoughts but with the material world representations, common thinking might be quite sufficient" [28].

Critical thinking is primarily creative. In the studies of Halpern the nature of critical thinking is revealed from the perspective of its essence, and efficient tools for its development are proposed [15]. Such approaches correspond with the ideas of developmental learning, where, first of all, it is necessary to "teach to think", including "thinking about the essence", "thinking about one's own thinking". This correspondence is not random and the similarity of the approaches is not only external. It is a representation of present time and a result of self-reflectiveness of the developmental psychology, where the priority goes to the issue of "how to teach" instead of "what to teach". Relying on the newest cognitive psychology achievements and her unique pedagogic experience, Halpern developed an efficient program for teaching critical thinking skills. It provides the answers to the following questions: "What happens when we think productively and creatively? What is the difference between "good" thinking (critical thinking by Halpern's definition) and "bad" thinking? Which are the ways and means for producing adequate knowledge and knowledge structures?". In search for answers to these questions Halpern relied on rich theoretical and facts material, accumulated by the cognitive psychology during cognitive process studies, particularly the studies of thinking. Halpern published the study results in the book "Psychology of critical thinking", which had several editions in the USA in the last years, which itself points to its popularity and undoubted practical value [15]. Changing the accents is highly significant for modern education practice. It allowed D. Halpern to develop new education strategies for secondary and higher education, which affected modern education modernization and the correction of its main tasks, because the applied direction, systematic coverage of all psychology of thought aspects and the richness of facts can be profitably used today for critical thinking development in students during college education process.

Modern students have to know that the ability to think critically has always been significant, and it is an absolute prerequisite in the XXI century. For the first time in the history of humankind there is a danger that we are capable of destroying everything that is alive on our planet. Decisions, which we make as individuals and members of society, whether they concern the economy, preservation of nature resources or development of nuclear weapons, will affect the future generations of people all over the Earth. Moreover, we have to make decisions about a whole range of important questions of local or private type. Because each citizen has to make a large number of important decisions, it seems natural that the society should be concerned, how these decisions are made. Education aimed at the perspective has to be based on two inseparable principles: the ability to quickly navigate in the rapidly expanding information flow and find what is needed

and the ability to comprehend and apply the obtained information.

Current psychological and pedagogic science is capable of helping critical thinking development. College students and teachers have to know about thinking, knowledge and the connection between them. We are talking about such thinking that allows us to use previously obtained knowledge in order to create new knowledge. For the efficient solution of the described problem we find appropriate to model the process of critical thinking development in students, to make this process into a certain system, which has to provide reaching the highest efficiency possible. In the current educational environment the technology of critical thinking development becomes more and more popular. It can be said that this technology integrates ideas and methods of collective and group ways of education, as well as technologies of cooperation and developmental learning. This technology contains modified ideas of free mentoring and creative self-development of a personality, activity-oriented approach to the education, principles of personality-oriented education and the ideas of heuristic and interactive learning. Interactive learning is learning through joint participation and cooperation in constantly changing groups. The main forms of interactive learning are a dialogue, group work, educational discussion, etc. The subject of analysis in a dialogue is various actual problems, which allow agreement and disagreement of opinions. A dialogue implies convincing and not authoritative word; it has to have statements, questions, usage of facts, which stimulate the search for the truth.

Pedagogues, who work towards the critical thinking development, note the following advantages of this technology: teamwork increases the participants' intellectual potential; cooperative work facilitates better understanding if the difficult, informationally dense material; there is an opportunity for repetition and consolidation of the material; the dialogue about the text essence increases; it creates respect towards one's own thoughts and experience; it promotes deeper understanding and the emergence of a new, even more interesting thought; curiosity and observational skills improve; students become more sensitive towards the experience of others (cooperative work creates unity, students learn to listen to each other, they take responsibility for the cooperative way of cognition); written speech develops reading skills, and vice versa; during the discussions several explanations of the same content are revealed, which once again works for comprehension; active listening develops; the fear of public speeches disappears; students are presented with a chance to demonstrate themselves in front of classmates and teachers and to increase their self-esteem. Critical thinking skills are a range of tools and operations, which allows finding a way to the set goal. Turning the pedagogic science from the traditional education methods to pedagogic technologies increases its efficiency and provides a positive systematic result. Currently a lot of innovative pedagogic technologies have been developed and improved. College education process has to be created on the basis of modern intensive pedagogic technologies, which include the highest intensification of students' learning.

## Practical part of the study

Critical thinking skills are especially important for prospective pedagogues. Implying the interactive methods for critical thinking development in prospective pedagogues is explained by the fact that currently education is faced with new tasks: not only does it have to give the knowledge to the students, but also to provide the development of cognitive skills and interests, critical thinking, abilities and skills for independent work. Emergence of new tasks is explained by the rapid growth of scientific and technological progress: if before the knowledge, acquired in college, could serve for a long time, sometimes for the whole life, now, in the time of scientific and informational expansion, they have to be constantly updated, which can be primarily done by self-education, which requires cognitive activity and independence. Methods of interactive learning provide students' involvement in the education process for a relatively long time, as well as independent critical production of solutions and increase of students' learning motivation. Moreover, learning interactivity provides constant interaction of students and teachers by forward and reverse feedback. During the professional education interactive learning methods gain significant attention because of the fact that their essence is creating didactic and psychological conditions, which promote students' intellectual, personal and social activity manifestation. Special traits of interactive learning methods are rooted in the fact that they are based on the stimulation for thinking activity, without which there is no moving forward in knowledge acquisition. Interactive learning methods are methods that stimulate students towards active thinking and practical activity during the process of mastering the educational material, because interactive education is mainly aimed not at the ready material recital by the teacher, memorizing and retrieval, but at independent knowledge acquisition in the process of active thinking and practical activity. An advantage of group work is that the student learns to verbalize and defend his opinion and compare it; students' critical thinking and search activity develops. The main trait of an educational discussion is goal-directed and ordered exchange of ideas and opinions in the group, where, ideally, each participant promotes this exchange. The most efficient learning tools, which were verified during our study, are the following: dividing into the groups and working on an educational problem, business games, debates, discussions, solving conflict situations, case-method, dilemma, etc. We conducted a pedagogic experiment in order to assess the level of efficiency of interactive methods complex, aimed at students' critical thinking development with regard to the revealed characteristics in the conditions of teamwork.

We propose the following hypothesis of the pedagogic experiment in our study: if professional education of prospective specialists will be organized with the use of interactive learning methods, aimed at their critical thinking development and regarding the revealed characteristics in the conditions of teamwork, it would facilitate the increase of critical thinking level in the students during the education process. The structure of pedagogic experiment included stating experiment and developmental experiment. On the

stating stage of the experiment we conducted the initial assessment of students' critical thinking level. The developmental experiment was conducted in two stages: integration of interactive learning methods in the education process and final control of students' critical thinking level. Pedagogic experiment was performed on the pedagogic specialties students of Kokshetau State University of Sh. Ualikhanov. Total amount of students, who participated in the experiment, is 140 people. At the beginning of the experiment during the formation of control and experimental groups we took the following facts into account: representativeness, i.e. the students have to have approximately the same level of critical thinking development; and the evaluation of the experiment results has to be conducted based on the developed criterions.

During the conduction of the stating experiment we used a range of methods, including a longitudinal assessment plan. Longitudinal method allows comparing elements of behavior or characteristics of multiple cases, evaluated during various times. While conducting a complex study, it is important to anticipate such statistical data, which would be representative and reliable enough. Usually in the studies of psychological and pedagogic problems the priority goes to the most popular analysis method - questionnaire. In our study we used a range of methods, which imply control and open questions. The methods in the study were:

The questionnaire method included the questions for revealing students' critical thinking development level, their interest towards critical thinking development, knowledge about the various ways of critical thinking development and the level of interest towards the critical activity;

The expert evaluation method included two blocks of questions: questions, reflecting students' representations of the abilities to think critically and self-evaluation of these skills; and the questions, which define the most efficient methods and forms of education for critical thinking development;

The interview method was used for studying students' critical thinking with regard to their psychological traits, predisposition to critical thought and work; it helped answering the following questions: presence of interest towards critical thinking development, how this interest is related with their critical thinking level, which is the dynamic of the interest towards critical thinking development;

The observation method was used in order to evaluate students' critical thinking level in the conditions of teamwork; in the complex experiment methodic this method provides validity and integrity of the facts material.

Evaluation of the efficiency of interactive methods system, aimed at students' critical thinking development, was conducted during the developmental experiment. The efficiency of the experimental work was evaluated by a range of the results, obtained during the stating and the developmental stages of the experiment, by an integrative system of study methods. During the experiment we used the following methods: complex methods for diagnosing students'

critical thinking by Halpern; questionnaire for defining the ability for critical thinking in the conditions of teamwork by M. Smith; "Evaluation of critical thinking level in the team members" by Stroup and Alien [15,29,30]. Validity of the obtained results was provided by the use of a range of methods, consistent with the study object and the set tasks, as well as by the combination of qualitative and quantitative analysis of the results. The experimental work addressed the characteristics of the specialty of our study participants' education. The ultimate goal, which is actualized in the teacher's qualification characteristic, is his preparedness for the professional activity, which means the readiness to organize and manage the students' education. It includes the readiness for critical activity in the field of education and mentoring. It requires critical activity knowledge, abilities and skills and developed critical thinking, which allows critically analyzing, thinking and selecting the most efficient methods and forms of education and mentoring.

Evaluation of development level of prospective teachers' readiness for critical activity was conducted in three directions: 1) evaluating the level of critical knowledge development; 2) evaluating the level of critical abilities and skills development; 3) evaluating the level of critical thinking development. Level of critical knowledge, abilities and skills development was evaluated by the following criterions: high level-100-81% of the correct answers; medium level-80-61% of the correct answers; low level-60% or less of the correct answers. Level of critical knowledge development was defined by the criterions of critical thinking concepts acquisition and knowledge of these concepts' essence. The concepts acquisition quality was assessed with the special tasks. Level of students' critical abilities and skills development was defined by the following criterions: analysis of the socially-significant problems in their education field; evaluation of the education and mentoring methods efficiency; choice and implementation of the most efficient forms of education and mentoring organization; cooperate in a team during the collaborative work.

During the experimental work we revealed the dynamics of prospective teachers' readiness for the critical activity. Furthermore we used the "Critical thinking" questionnaire in order to define the level of prospective teachers' critical thinking development. Critical thinking was defined as an integration of three main components: ideological, cognitive-affective and behavioral. Due to this, we proposed the appropriate questions. Ideological component (attitude towards critical thinking and activity) includes the affirmation for critical thinking development, interest towards critical activity, need for communication and cooperation in critical activity. Cognitive-affective component (critical knowledge) includes understanding of critical activity, critical knowledge and urge to become a critical personality. Behavioral component is represented by the critically-oriented activity. Level of critical thinking level of the conscience was evaluated by the following criterions: high level is characterized by the positive affirmation for critical thinking development, positive attitude towards critical activity, high need in critical activity and critical thinking development; medium level is characterized by a moderate interest towards critical thinking

development, average attitude towards critical activity and average need in critical activity and critical thinking development; low level is characterized by a strong rejection of the urge to develop critical thinking, absence of interest towards critical activity, low need in critical activity and critical thinking development. The integral system of critical knowledge, skills, abilities and critical thinking represents the prospective teacher's readiness for critical activity. The readiness of the prospective teacher is his ability for deep understanding of the need in critical thinking development,

understanding of its essence, goals and tasks, adequately evaluating the work conditions, as well as correctly using his critical activity knowledge and abilities for solving the certain tasks. The results of the developmental experiment allowed defining the level of prospective teachers' readiness for pedagogic activity. During the empirical and experimental work we observed the dynamics of prospective teachers' critical thinking development. The generalized results are presented in table 1. CG is the control group, EG is the experimental group.

Group name Level	CG (%)			EG (%)		
	1	2	3	1	2	3
Stating experiment						
low	50,2	48,6	55,0	51,6	48,4	49,2
medium	32,2	42,2	33,3	37,4	37,6	38,9
high	17,6	9,2	11,7	11,0	14,0	11,9
Developmental experiment						
low	53,1	48,1	53,1	-	-	1,5
medium	35,6	40,2	36,5	44,6	43,1	41,0
high	11,3	11,7	11,4	55,4	56,9	57,5

The presented data demonstrates higher scores in the students from the experimental groups. Positive dynamics, revealed on the basis of the obtained results of the experimental groups in comparison to the final scores of the control groups, confirms the efficiency of the developed complex of the interactive methods for students' critical thinking development. Therefore, the conducted study confirmed the proposed hypothesis.

## Discussion

Present study was conducted in a collaborative work of the authors; the major experimental ground was created on the base of Kokshetau State University of Sh. Ualikhanov. The results of the conducted study were discussed during the meetings of those departments, the scientific seminar "Actual problems of psychological and pedagogic science and modern education" and on the international scientific and practical conferences: "Valikhanov's readings", "Current problems of contemporary education and pedagogic specialists training" in Kazakhstan (Kokshetau, Astana)[31-33], "Introducing new educational technologies and principles of educational process organization" (Singapore), "Modern education: problems and solutions" (Bangkok, Thailand), "Innovative technologies in higher and professional education" (Majorca, Spain), "Education and Science without Borders" (Munich, Germany), "Actual Problems of Education. Experience of Realization of Bologna Agreements" (Amsterdam, Netherlands), "Current problems of science and education" (Moscow, Russia), "Problems of international integration of

national education standards" (Paris, France). The generalized results of the conducted study are being published for the first time.

## Conclusion

The results of the conducted study allowed making the following conclusions. Firstly, having critical thinking is a prerequisite for a modern college graduate, because in the professional activity critical thinking facilitates the generation of efficient solutions and new technologies. Critical thinking development in modern college students allows successfully mastering the bases of their future profession and being prepared to live and work creatively. It is facilitated by the development of critical opinions, the ability to critically evaluate everything and the results of their own activity and the activity of their colleagues, as well as the ability to work in a team and cooperate in order to solve the set tasks. Secondly, the goal of modern professional education is related to the critical thinking development in students as prospective specialists through expanding the borders of the integral education process by using information and communicative technologies, new interactive learning methods and teamwork tools in the conditions of education process. Thirdly, the essence of students' critical thinking development process consists of organizing the college education process such way that specific goals and tasks, content creation, methods with the use of modern education technologies, control and analysis of the reached results would serve this goal.

In present experimental work we studied critical thinking development in students - prospective teachers. The studied process, as a part of the integrated education process in higher education, depends on the organization of the whole system of developing the readiness for the professional activity. Readiness for critical activity presents as a social and professional position of the teacher's personality. Prospective teacher's education is based on the critical ideology as a system of critical knowledge, abilities, skills, beliefs and opinions. Teacher's readiness for critical activity in the field of education is professionally significant personality state, essence of which consists of a system of critical knowledge, abilities and skills, as well as of the presence of well-developed critical thinking, which together provide the successful professional activity. During the experiment in order to get a more complete characteristic of the obtained results, we separated three levels of critical thinking development-high, medium and low, which were defined according to its structural components. The efficiency of scientific pedagogic developments of the conducted study is confirmed by the results of the pedagogic experiment.

Scientific novelty of the study consists in the search for the solution of the studied problem by developing a scientific verification and conducting an experimental evaluation of the interactive learning methods complex, aimed at the students' critical thinking development during college education process based on the revealed characteristics in the conditions of teamwork. Theoretical significance of the study consists of the analysis of the problem of students' critical thinking in college education; we developed and scientifically verified the process; based on the conducted analysis we generalized the characteristic of the "students' critical thinking" concept interactive learning methods complex for students, which is aimed at the critical thinking development. Practical significance of the study consists of the development of methodic support for the interactive learning methods complex in the conditions of the students' teamwork, aimed at critical thinking development, which might be used by college professors, as well as teachers of post-secondary degree courses; upon the conclusions of the conducted study we prepared recommendations of students' critical thinking development during the professional education process in college. The results of the study allow proposing the following recommendations: using the proposed method of students' critical thinking development in the conditions of teamwork, based on the use of interactive learning methods.

The conducted study does not aim at exhaustive solution of the problem of students' critical thinking development; it might rather be considered as one of the possible solutions of the studied problem. The perspectives of the study include searching for new ways of improving the process of students' critical thinking development in accordance with the progressing rates of professional education development.

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