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## PEDAGOGIC INTERACTIVE TECHNOLOGY “DEVELOPMENT CRITICAL WAY OF THINKING THROUGH READING AND WRITING” AS QUALITY IMPROVEMENT MECHANISM OF TEACHING ACADEMIC DISCIPLINE

*The theoretical reasons of applying interactive educational technology “Development critical way of thinking through reading and writing” at the Department of social medicine, economics and organization of health care as a quality improvement mechanism of teaching academic discipline “Social medicine and organization of health care” for six-year students of medical faculty after medical specialities 7.110101 “General medicine”, 7.110104 “Pediatrics” and 7.110105 “Prophylactic medicine” in the context of credit-module system of education was revealed.*

**Keywords:** critical way of thinking, higher medical education, education quality, social medicine, organization of health care, credit-module system, interactive educational technology, development of the critical way of thinking through reading and writing.

*Раскрыты теоретические предпосылки применения интерактивной учебной технологии “Развитие критического мышления через чтение и письмо” на кафедре Социальной медицины, экономики и организации здравоохранения медицинских вузов Украины как механизм совершенствования качества процесса преподавания академической дисциплины “Социальная медицина и организация здравоохранения” для студентов VI курса медицинских факультетов за врачебными специальностями 7.110101 “Лечебное дело”, 7.110104 “Педиатрия” и 7.110105 “Медико-профилактическое дело” в контексте кредитно-модульной системы учебы.*

**Ключевые слова:** критическое мышление, высшее медицинское образование, качество учебы, социальная медицина, организация здравоохранения, кредитно-модульная система, интерактивная учебная технология, развитие критического мышления, через чтение и письмо.

Currency. Transfer in the system of undergraduate preparing of future doctors in the independent Ukraine to basis of credit-module system [14] left behind lecturers of departments of higher medical educational establishments of accreditation level IV unresolved problems:

- first of all how disastrous increasing volume of medical information of various origin turn into knowledge of the student?
- secondly, how received by student of medical university theoretical knowledge transform into professional skills? [18]

It is very important that at the beginning of XXI century, at the time of highly informative technologies [7], in Ukraine were respectively changed the goals and objectives of medical education to organize an appropriate level of quality [6]. International practice clearly showed that the time from among the Encyclopedists practitioners who have great, but stable store of knowledge already passed [12]. The explanation for this lies in a current need of doctors in the society, who will be able to find, use, quickly and professionally analyze variable information about health of person, community, society and take the necessary high-quality professional and effective management decisions.

Therefore, the present order of society in the independent country consist in possession by future doctors not only appropriate amount of basic knowledge, communicative competence, but a high level of intellectual development, certain personal skills, new type of mental activity, critical way of thinking, active position as citizen-patriot, who can be an active member of establishment independent Ukraine as listed in the National Doctrine of education development in Ukraine in the XXI century [15]. Today the basic direction in higher medical education is not memorizing by student great volume of facts but education of future doctors by effective means of receiving and analyzing available information. The basis in the education of students is didactic tool, which should be used for achieving themselves knowledge [20].

The implementation of European experience in the achieving desired results on stage of undergraduate preparing of future doctor is possible through the introduction of interactive (from English “inter”- mutual and “act” – to act) technologies into studying of students which are also motivation elements at enhancing learning quality [5]. Such didactic approach makes this study important because only presence of theoretical knowledge without practical skills

and abilities is regarded as gap between theory, science and practical activity, as in the Biblical parable of “The good Samaritan” [Gospel of Luke 10, 25-37].

Aim of work is scientific ground for applying pedagogic interactive technology “Development critical way of thinking through reading and writing” (critical thinking) in the context of credit-module system of education at the basic model of education among six-year students of medical faculty at the academic discipline “Social medicine and organization of health care”.

Materials and methods. During scientific investigation was used a large-scale volume of material, which was processed by following methods: historical and literary synthesis, retrospective method, deductive understanding, structural and logical analysis, abstract thinking and own observations with consideration principles of system approach and system analysis.

Results and discussion. Retrospective analysis of current information from this problem convincingly witness, that combination of words “critical thinking” not all at once found its place among scientific works. There were series of investigation of the thinking process before it, which authors characterized as “creative”, “effective”, etc [9]. Sustainable

term “critical thinking” begins actively used only in the 70<sup>th</sup> years of XX century. Researchers of this concept found its roots in the works of such thinkers as Plato (428 or 427 B.C. – 348 or 347 B.C.), Aristotle (384 B.C. – 322 B.C.), Thomas Aquinas (1225– 1274), James Mill (1806-1873), B. Russell (1872-1970), K. Popper (1902-1994), etc [26].

Scientific analysis of the content “critical thinking” goes back to Karl Raimund Popper (Great Britain philosopher of XX century [29]) times who first in the evolutional epistemology (from Greekepistēmē– knowledge and ... logy; study about the nature and pattern of cognition; the same as the theory of knowledge) [25] proved that any living organism is always searching solution of problem/problems.

According to Raimund Popper’s statements if the problem arises before the organism than it generate efforts to solve it with the help of suggesting trial theories that are given in critical process of removing mistakes. Thus, Popper emphasized that all organisms are extremely active in acquiring knowledge, perhaps, even active, than in searching food [8].

Analysis of foreign and native studies convincingly shows that there is no single definition of such type of thinking as critical. Thus, a prominent American philosopher John Dewey (1859-1952) convincingly grounded that the fundamental aim of modern education is not providing students with information, but to develop their critical thinking [27], since education is focused on future that cannot be predefined. Modern researches Clark J.H. and Beadle A.U. define this term as a process, when a brain process information to understand constant ideas, create new ideas and solve problems [2].

Term “critical thinking”, reports Freire P. (2003), in Ukraine is given in the “Concept of civil education in Ukraine” that is developed by project “Education for the democracy in Ukraine”: “Critical thinking is ability of person to overcome a tendency to single dogmatic perception of world, skill to analyze a particular problem from different sides, use information from various sources, distinguish objective fact from subjective thought about it, make logical conclusion than preconceived assumption or superstition. It is an ability of a man to adequately

determine the causes and preconditions of current problems in his life, readiness to make efforts for it practical (not rhetorical) overcoming”. All this shows that there are no common single definition of the term “critical thinking” and besides different accents all these definitions are based on general key properties of the content of man critical thinking [23].

However, for us, exactly Richard Paul (USA, 1993) proposed the following working definition of “critical thinking” that is an acceptable explanation for the pedagogic practice: critical thinking – is thinking about thinking, when You think for improving own thinking [28].

Scientists and teachers of Hobart & William Smith College and the University of Northern Iowa – Jenny L. Steele, Curtis K. Meredith, Charles Temple and Scott Walter – developed interactive educational technology “Development critical way of thinking through reading and writing” (critical thinking, DCWTRW) [3] in the context of given motivation of development critical thinking of a man at the end of XX century.

Interactive technology DCWTRW is unique, penetrating and over disciplinary in its content, that fully meets content of academic discipline “Social medicine and organization of health care” for six-year students of medical faculty after mentioned above medical specialities.

Such didactic approach was chosen as discipline “Social medicine and organization of health care” has multidisciplinary nature and is interdisciplinary, since based on theoretical knowledge and practical skills of students achieved at other departments of medical university.

Besides, mostly “Social medicine and organization of health care” now is able to develop such type of thinking at the future doctors, that gives them possibility adequately evaluate new arisen conditions, forms strategy for overcoming problems in the civil health and medical securing, and also teaches to adapt in the professional activity to new, sometimes unexpected social, political, economical and other conditions in the current health care system.

Therefore, the interactive technology DCWTRW, like us, is that part of integrated system of education at the Depart-

ment of Social medicine, economics and organization of health care that allows improving practical skills of work with organizational and administrative available informational medical scope by reading and writing among six-year students after medical specialities “General medicine”, “Pediatrics” and “Prophylactic medicine” during their primary specialization. Finally, it allows developing and improving positive features of the future doctor in the open society.

It is important to note, that pedagogic technology DCWTRW does not mean negatively thoughts or unfounded criticism on the subject of practical courses. It is, as a rule, weighed and thoughtful consideration, interpretation of different and sometimes contradictory approaches or conceptions of an organizational problem, enclosed by academic theme, with the purpose to accept grounded versions of administrative decisions and formulation appropriate assessment. Therefore, the term “critical” in the context of social medicine and organization of health care is equal to word “analytical”.

Implementation of the pedagogic technology DCWTRW at the department is able to realize following goals among future doctors [11, 21]:

- testing proposed ideas after themes of practical courses. It combines students’ skills of objectively assessing own ideas and ability to take into consideration criteria and restrictions that determine practical possibilities of implementation and improving ideas in the doctor’s practical activity;
- formation of student’s new style of thinking on the organization of health care. For this future doctor must be plain, flexible and reflective, realize internal multiple position and point of view, be alternative at making decisions;
- development of doctor’s basic qualities, such as critical thinking, communicativeness, creativeness, mobility, independence, tolerance, responsibility for own choice and results of own activity.
- During each practical course on a specific academic theme it is important to work out following tasks [17]:
  - “educational student motivation”. It prompts to increase interest in studying and active perception of educational material thorough specific theme

of offered appropriate legislative and normative documents or specific situations in practical health care;

- “sheet culture”. It allows to form practical skills during processing appropriate accounting-reporting statistical forms, different types of situational tasks according to guidance documents;

- “information literacy” through development in students abilities for self-analytic work with the information of appropriate complexity (legislative, normative and legal, instructive, methodical, etc.);

- “social competence” is achieved by forming communicative skills and personal responsibility for the acquired and demonstrated knowledge and acquired practical skills.

The mentioned aims and tasks of the interactive pedagogic technology DCWTRW must grounded at educational process on didactic regularity, which in national pedagogy called didactic cycle, and in mentioned interactive methodology is based on three phases: evocation; realization of meaning; reflection [4, 13, 16, 24].

Content of evocation in the educational technology DCWTRW is grounded on recalling achieved knowledge at other departments on similar topics during the preparing process for practical courses by students.

Just through this phase future doctor analyses and determines own level of knowledge – “What I know?”, and forms own conception on self-achieving necessary academic information in extracurricular conditions – “What I want to know?” Thus, the previously acquired knowledge of the students are lead on level of understanding and set base for mastering new knowledge. It gives ability for students for effective combining new information with previous known and consciously and critical approach for understanding new information.

During evocation phase of interactive technology DCWTRW is activated knowledge of student achieved during extracurricular self-preparing and during practical course, because he becomes active under the condition of purposefulness of own thoughts and expression own views through mechanism of individual and group form of work.

Besides this, during evocation/moti-

vation phase is forming student interest as personality in achieving new information and importance of the subject and also is providing appropriate interest and definition of personal aim in discussing the theme of practical course. Purposeful education is more effective than purposeless, and aims selected independently more powerful than aim defined by lecturer.

The determinant task of “realization of meaning” phase in the educational process is to support student’s activity, liking and inertia of motion in achieving knowledge, developed during evocation phase. During phase of understanding through mind students have great possibility for active achieving of information; its systematization; possibility of thinking about the nature of the object that is studied as a new value comparing with known; learn to formulate questions and determine through analysis of own understanding of the theme of practical courser and its significance for practical activity. During “realization of meaning” student has possibility to execute critical and comparative analysis and synthesis of present and achieved knowledge after specific theme of practical course, also to exchange with ideas, where personal search necessarily preceded by an exchange of views.

The third phase – reflection is directed on summary and systematization of new information, developing own student’s attitude to educational material and formulation questions for further advancement in the information field.

Reflection phase is grounded on recognized achievement of new knowledge by students, forming new skills and their combination with previous acquired, also lead out current and achieved knowledge on level of its understanding and using. Mostly on this stage analysis of student’s own mind operations forms core of this phase, as reflection over this education process take place. To develop communication skills for future doctors is extremely important direct live exchange with ideas. Therefore, expression of new information by own words allows better understanding and accepting it by surrounding people.

However, the third stage of work after methodology “Development critical way of thinking through reading and

writing” – reflection phase – is required not only to the lecturer, who will check memory of own students, but for students too, who will self-analyze if they achieved goals, solved problems and contradictions that developed during self-processing of new material.

Analysis of reflection is directed on clarifying the meaning of new material, the construction of further education route (this is clear, this is not clear, find out more about it, on this it would be better to ask a question, etc.). But such analysis will be little useful if not convert it in verbal or written form. The chaos of opinions which was in the students’ mind during process of self-understanding the theme of practical course is structured and transformed on new knowledge during process of verbalization, new questions and doubts can arise. However, students have possibility to realize, that solving the same problem can cause different assessment that will vary in content and form during exchange of views about read and listened information. Some of the ideas of other students may be quite valid for acceptance as their own. Other thoughts give rise to discussion. In any case, reflection phase contributes to the development of critical thinking skills.

In general, interactive technology DCWTRW is personally-oriented and allows solving a wide range of educational tasks: educational and those that develop individual and professional analysis. In a modern dynamic changing world it is important in the education process to create preconditions for future doctor to get an opportunity to be engaged in the multi-professional interaction, to form basic doctor’s skills in the information field and learn to apply these skills in everyday practical activity.

Technology DCWTRW allow to teach future doctor to prevent professional situations in the practical activity; transfer knowledge to each other; though achieved knowledge influence on solving specific problems [19]. In additions, educational technology DCWTRW allows to form students’ new style of thinking, characterized by frankness, flexibility, understanding internal multiformity of positions and points of views, alternativeness of decided decisions. It allows to develop such basic features of future

doctor as personality, professionalism, clinical thinking, reflexivity, communicativeness, creativity, mobility, independence, tolerance, responsibility for own choice and result of own activity [1].

It is worth mention, that using the technology “Development critical way of thinking...” during education of students of medical universities activates and updates readiness and ability to self-development not only students but also lecturers. That is, when we say that the present time requires knowledge for skills, the lecturer must be ready that during education process he has to do less controlling and informative and more coordinating, directing and correction functions [22].

However, for us, applying of interactive technology DCWTRW during education process of students of medical universities is problematic due to conservatism in changing psychology of existed and formed stereotypes in education among students and lecturers, which requires considerable hard work for all and reinterpretation of made yesterday, doing today and planned for tomorrow.

Conclusions. 1) Applying interactive educational technology “Development critical way of thinking through reading and writing” at the Department of social medicine, economics and organization of health care as a quality improvement mechanism of teaching academic discipline “Social medicine and organization of health care” for six-year students of medical faculty after medical specialties 7.110101 “General medicine”, 7.110104 “Pediatrics” and 7.110105 “Prophylactic medicine” in the context of credit-module system of education is that reanimating possibility for development “scientific thinking” among future experts in medicine [10], because:

- the aim of education is not the volume of knowledge or information, but the ability of future doctor to manage this information: to search, to appropriate with the best way, to find sense in it, to use in practical activity;

- do not give students “ready” knowledge, but create conditions for them to construct their own, achieved during education knowledge;

- communicative principle of education students in medical universities of Ukraine should be dialogue, while the

regimen of practical courses – interactive, characterized by a common finding in solving problems and also “cooperative” relations between lecturer and student;

- student ability to think critically is not seeking of faults, but objective assessment of positive and negative sides in cognition of the education object; it is not simply thinking, but thinking leads to self-improvement, received by student with skills of using correct assessment standards of critical thinking.

2) Using mentioned theoretical grounds on interactive educational technology DCWTRW during educational process of six-year students of medical faculty after academic discipline “Social medicine and organization of health care” is direct mechanism for improving quality of their education. Finally, it fully and entirely will promote development of critical thinking in the future doctors as a basis in the educational process and further doctor’s activity. It allows according to European standard of education transform immensely growing volume of medical information into students’ knowledge, while received by student of medical university in such way theoretical knowledge into professional skills.

## References:

1. Аліфанова І. Модернізація змісту освіти. – Режим доступу: -[http://osvita.ua/school/school\\_today/1147](http://osvita.ua/school/school_today/1147)
2. Веретенникова Анна. Американский опыт - толчок к критическому мышлению- Режим доступу: [http://www.prof.msu.ru/publ/book6/c62\\_03.htm](http://www.prof.msu.ru/publ/book6/c62_03.htm)
3. Евстифеева О. В. Развитие критического мышления через чтение и письмо. Технология РКМЧП. - Режим доступу: <http://nach.goruo.kostanay.kz/16/krpch.doc>
4. Євдокимов В.І., Олійник Т.Д., Горькова С.А., Микитюк М.В. Практикум з розвитку критичного мислення. - Харків: Торнадо, 2002. - 144 с.
5. Ильюшонок Н.Н. Анализ возможностей интерактивных и компьютерных технологий для повышения качества обучения. - Режим доступу: <http://festival.1september.ru/articles/310752/>
6. Коротков Е. Концепція якості

освіти. - Режим доступу: - <http://osvita.ua/school/manage/1342/?list=2> -

7. Кремень Василь. Якість освіти - основа розвитку. - Режим доступу: - [http://www.kmu.gov.ua/control/uk/-publish/article?art\\_id=60649346](http://www.kmu.gov.ua/control/uk/-publish/article?art_id=60649346)

8. Критическое мышление. - Режим доступу: [http://letopisi.ru/index.php/Критическое\\_мышление](http://letopisi.ru/index.php/Критическое_мышление)

9. Л.Ямщикова. Критичне мислення як вид розумової діяльності. - Режим доступу: [http://74.125.95.132/search?q=-cache:DDqcXJwmzD8J:spc.ks.ua/file\\_download/](http://74.125.95.132/search?q=-cache:DDqcXJwmzD8J:spc.ks.ua/file_download/)

10. Лаврінченко О.В. Критичне мислення – сучасна освітня інновація. - Режим доступу: [http://www.pravo.vuzlib.net/book\\_z1699\\_page\\_4.html](http://www.pravo.vuzlib.net/book_z1699_page_4.html)

11. Линдсей Г., Халл К., Томпсон Р. Творческое и критическое мышление. - Режим доступу: <http://nkozlov.ru/library/samorazvit/d4031/>

12. Макарова Е.Л. Использование интерактивных форм обучения для повышения эффективности образовательного процесса. - Режим доступу: [www.t21.rgups.ru/doc2007/11/17.doc](http://www.t21.rgups.ru/doc2007/11/17.doc)

13. Маковеева Т.Б. Технология “Развитие критического мышления через чтение и письмо (РКМЧП): базовая модель и некоторые методические приёмы”. - Режим доступу: [ido.tsu.ru/nfpkikt/res3/-MakoveevaTB.pps](http://ido.tsu.ru/nfpkikt/res3/-MakoveevaTB.pps)

14. Медична освіта у світі та в Україні: Навчальний посібник / Ю.В. Поляченко, В.Г. Передерій, О.П. Воло-совець та ін. – Київ, “Книга плюс”, 2005. – 384 с.

15. Національна доктрина розвитку освіти України у XXI столітті. -- К.: Стилос, 2001. - 342 с.

16. Павловська О. Р. Розвиток критичного мислення у навчальному процесі. - Режим доступу: <http://www.ipro.-org.ua/files/>

17. Развитие критического мышления через чтение и письмо. Технология РКМЧП. - Режим доступу: <http://nach.goruo.kostanay.kz/16/krpch.doc>

18. Сурмин Юрий. Что такое кейс-метод? Взгляд теоретика и практика.- Режим доступу: [http://www.casemethod.ru/about.php?id\\_submenu=1](http://www.casemethod.ru/about.php?id_submenu=1)

19. Технология «критическое мышление». Часть 1.- Режим доступу: <http://209.85.229.132/>

search?q=-cache:Eb0dLtjNxFkJ:gimn6.ru/article.asp%3Fid\_text%3D120&hl=ru&gl=ua&strip=1

20. Технология «критическое мышление». Часть 1.-Режим доступа: <http://209.85.229.132/search?q=cache:>

21. Технология “Развития критического мышления через чтение и письмо”. - Режим доступа: <http://www.thl.narod.ru/3/ttt.htm>

22. Тягло О. В. Критичне мислення як освітня інновація // Вісник Університету внутрішніх справ. -

Харків, 1997. - Вип. 2. - С. 229-232.

23. Фрейре П. „Педагогіка пригноблених”, К., ЮНІБЕРС, 2003, стор. 74

24. Чарльз Темпл, Джінні Стіл, Курт Мередіт. Методична система «Розвиток критичного мислення у навчанні різних предметів» (Підготовлено для розвитку критичного мислення) / Посібник I-IV, Науково-методичний Центр розвитку критичного та образного мислення: Інтелект, 1998. - 32 с

25. Эпистемология. - Режим до-

ступу: <http://dic.academic.ru/dic.nsf/es/66693/эпистемология>

26. Alec Fisher. Critical Thinking - Cambridge University Press, 2001. -248 с.

27. Dewey J. How We Think. Heath. Boston, 1910.

28. Paul R.W. Critical Thinking: What Every Person Needs to Survive In ARapidly Changing World. – 3-rd edition revisited. Santa Rosa, CA. 1993. P.97-98.

29. Popper, Karl Raimund . - Режим доступа: [http://ru.wikipedia.org/wiki/Поппер,\\_Карл\\_Рэймонд](http://ru.wikipedia.org/wiki/Поппер,_Карл_Рэймонд)



## **INTERNATIONAL UNION OF COMMERCE AND INDUSTRY**

**International Union of Commerce and Industry (London, UK) – a union of commercial enterprises, businessmen, scientists, public figures and politicians from different countries. The union combines the social and commercial elements of functioning.**

Promotion of international consolidation and cooperation of business structures;

Promotion of development of commercial businesses of various kinds;

Assistance in settlement of relations and questions of businessmen with each other and with social partners in business environment;

Assistance in development of optimal industrial, financial, commercial and scientific policies in different countries;

Promotion of favorable conditions for business in various countries;

Assistance in every kind of development of all types of commercial, scientific and technical ties of businessmen of different countries with foreign colleagues;

Promotion of international trade turnover widening;

Initiation and development of scientific researches, which support the effective development of businesses and satisfy the economic needs of the society;

Expert evaluation of activities in the field of settlement of commercial disputes, establishment of quality standards and defining of factual qualitative parameters of goods and services;

Legal and consulting promotion of business;

Establishment and development of activities of the international commercial arbitration;

Exhibition activities;

Holding of business and economic forums;