# MATERIALS
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## MEDICINE

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# APPLICATION OF THE INTERACTIVE "BRAINSTORMING" METHOD IN TRAINING RESIDENT PHYSICIANS MAJORING IN THE "INTERNAL DISEASES" SPECIALTY

The development of the educational system requires of the pedagogical science and practice studying and introducing new methods of teaching and educating young people. Innovation in pedagogy is firmly associated with the overall processes in the society, with global problems, and with the integration of knowledge into the forms of social being. Nowadays a new pedagogy is being created, the characteristic feature of which is innovation, i. e. the ability to renew oneself, the openness to the new [1, 2].

The most important distinctive feature of the modern educational system is the coexistence of the two strategies for organizing the learning process, viz. the traditional and the innovative ones.

The crucial precondition of the learning and educational process is its personality orientation aimed at ensuring that every student becomes a full-fledged, self-sufficient, creative entity of activity, cognizance and communication, a free and independent individual.

Interactive learning technique is such an organization of the educational process that makes impossible non-participation in the collective, complementary process of learning based on the interaction of all its participants: either a person has a specific task, for which he/she must publicly report, or the quality of the performance of the task set the entire study group depends on his/her activities.

There are four groups of interactive learning techniques distinguished by forms of learning [3]:

An interactive technique of group (cooperative) learning (work in pairs, in small groups, "cooperative learning", etc.);

Frontal techniques for interactive learning ("microphone", "brainstorming", specific case studies or the "case method", the incidents method, etc.);

Situation simulation, viz. learning in a game (the business game method);

A technique of discussing controversial issues, viz. learning by discussion (the "PRES" method", discussion, debate, discussion seminar, "round table").

Of late, learning by the "brainstorming" method has been occupying a special place in professional education among other modern learning techniques and methods. "Brainstorming" is a technique of creative group thinking that makes it possible to find solutions to complex problems by freely expressing the opinions of all the participants [3]. The purpose of the interactive "brainstorming" method is to intensify intellectual activity aimed at putting forward ideas for performing a specific task, proposing ways to solve a particular problem, as well as for breaking the mould of thinking inertia, overcoming stereotypes when dealing with a creative challenge, and accumulating ideas with regard to solving a problem set.

The basic principles of the "brainstorming" method are: not criticizing the answers of others; proposing any decision that comes to one's mind; no self-censorship; putting forward the largest number of ideas, no matter whether it will be possible to make use of them or not; freely developing, improving, combining and expanding any ideas expressed; allocating a specific amount of time to get an answer to a well-defined question; the number of participants must be no more than 10 to 12 people.

The main goals of the "brainstorming" method:

I. The learning goals are:

a) to learn to formulate one's own ideas, to listen to and to accept alternative ideas;

b) to learn to analyze the information received and to solve complex clinical problems;

c) to achieve a high level of resident physicians' professional training;

d) to develop clinical thinking;

e) to improve the skills of clinical application of theoretical knowledge;

f) to develop in resident physicians the ability to research using literature, documentation and illustrative materials;

g) to develop independent clinical thinking, the power of observation, the ability to isolate the essence;

h) to form communicative qualities, skills of efficient interpersonal communication and

collegial relationships.

II. The organizational goals are:

a) to learn to hold discussions, to solve cognitive tasks against the background of emotional stress;

b) to develop critical thinking;

c) to develop the ability to work in a team.

III. The competency goals are:

a) to promote the development of non-standard thinking and activity for the acquisition of professional skills and capabilities in diagnosing and treatment.

Resident physicians should be able to:

Determine the risk factors depending on the nosology.

Collect complaints and analyze the case history.

Determine the general symptoms of the disease.

Develop diagnostics tactics.

To conduct differential diagnosis vis-à-vis diseases.

Define the treatment tactics.

Develop principles of primary and secondary prevention.

The stages of the "brainstorming" method are:

1. The preparatory stage: problem statement

2. The main stage: generation of ideas

3. The final stage: analysis

The resident physicians' actions at the preparatory stage: familiarizing themselves with the instructions and the essence of the "brainstorming" method; independent study of the literature recommended for the subject.

The teacher's actions at the preparatory stage: explaining the rules of applying the "brainstorming" method; forming small groups united by a common learning goal; distributing roles in each group; reading out the situation task.

The methodology support at the preparatory stage consists of the following: materials of lectures, textbooks, guides for practical classes, handout material, methodological recommendations and web page addresses of the Chair information websites.

The resident physicians' actions at the main stage: putting forward ideas for the solution of the problem set; registering their ideas on separate sheets; substantiating

their ideas and setting them out in the form of notes, abstracts, drawings, tables; discussing and selecting the best ideas for solving the problem set; after performing the task, presenting their variant of the solution to other members of the group who complement it with their ideas.

The teacher's actions at the main stage: putting leading questions, coordinating the participants' efforts when discussing the ideas put forward.

The teacher's actions at the final stage: summarizing the results of the work done; working out an evaluation system and evaluation criteria; working out a grading scale; assessing whether the problem is actually solved; diagnosing professional skills; summing up and discussing the results of the collective activity; determining the final scoring of each student's progress.

The resident physicians' actions: discussing problem solutions used; receiving the teacher's grade in points; thinking over the situation around achieving the goal, feeling the success, if any.

The "brainstorming" participants' grading scale is as follows: the ability to conduct a differential diagnosis and select adequate diagnostic and therapeutic tactics within a limited time frame – 1 to 10 points; the communicative ability, the ability to work in a team – 1 to 5 points; the proactive behaviour (the number of ideas put forward, each idea) – N ×1 point, the quality of ideas at the stage of their generation – trivial

ones mean 1 point, ingenious ones mean 2 points, heuristic ones mean 3 points, fantastic ones mean 4 points, creative ones mean 5 points; the quality of ideas at the stage of their discussion (the ideas that are not used in the formation of the conclusion – 1 point, the ideas used to formulate the conclusion – 1 to 5 points, a really practicable idea –10 points); competence (the proactive behaviour during the discussion of the ideas put forward – points by the number, the ability to select and substantiate the ideas that will eventually find their way into the conclusion – 15 points).

Determining the best participants in the overall rankings with the differentiation by points:

Grade "5" corresponds to 25 points;

Grade "4" corresponds to 20 points;

Grade "3" corresponds to 19 points and fewer.

**The main conclusions regarding the pedagogical efficiency of the method**:

It gives a new impetus to problem learning; the discussion process forms specific skills and abilities: the ability to form opinions, to argue; a young physician obtains knowledge through his/her own activity; it focuses attention of the participants on the topic, gives them the opportunity to concentrate; makes one think against the background of emotional stress; ensures each member of the "brainstorming" group equal participation in discussing problems and putting forward ideas; creates favourable conditions for the emergence of the "chain reaction" effect and synergistic reinforcement of ideas; stimulates and motivates learning activities, the ability to solve interdisciplinary problems, an informal approach to finding an answer or a solution; emotionality imparts to this method some kind of commonality with the game-based learning methods. The introduction of the interactive "brainstorming" method into the learning process during the primary thematic instruction of students majoring in the "General Practice-Family Medicine" specialty contributes to making their knowledge more profound and forming in them a creative approach to solving the tasks set.

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