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## Aspects of development of leader creative thinking of medical student at the undergraduate level of medical education

Aniuta S. Sydorчук, Vasyl D. Moskaliuk, Yuriy O. Randiuk, Vasyl D. Sorokhan, Oksana I. Golyar, Leonid I. Sydorчук, Anna V. Humenna  
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### ABSTRACT

**Introduction:** Current issue deals with analysis of possible ways to develop leadership in medical students. Taking into consideration the reforming in National Ukrainian educative system and contemporary tendencies of world integration, the development of skillful personality is the prioritize task.

**The aim** of study is to emphasize on the best-used ways for a development of leader creative thinking at the first basic level of medical education.

**Materials and methods:** methodology used here is descriptive analytical investigation based upon the own experience have been since 2005-2015 with undergraduate foreign medical students who studied disciplines «Infectious diseases» and «Epidemiology of Infectious diseases», «Tropical Medicine and Clinical Parasitology» at the Higher state educational establishment of Ukraine «Bukovinian State Medical University» (Chernivtsi, Ukraine).

**Conclusions:** the authors state that creative thinking of a leader is necessary and important part of innovative pedagogy nowadays. From the positive side of it, formation of new generation of medical students learned by competence-based approach with readiness to carry out multitasks. Coupled with, «thinking out of the box» development in individual person helps to discover maximum features of personality. From the negative side of it, there are difficulties to keep activity within certain limits. Most pre-graduate medical students actively express their best creativity in extra-class time within university events like Round Tables dedicated to International days of hepatitis B&C, malaria, HIV etc. to share with others of prevention recommendations. There are many methods to develop creativity and flexibility of cognitive processes, such as brainstorming session, case study, micro-reality, SCAMPER and lateral thinking method etc. Thus, leadership skills and creative thinking both had targeted for excellent qualitative medical education.

**KEY WORDS:** medicine, education, leader, personality, development, creativity, thinking.

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### INTRODUCTION

In recent years, there have been significant changes in the public consciousness, which necessitated rethinking of the major trends of education. After analyzing the domestic and international experience in organizing training activities, it could be concluded that at the present era, there are two main areas of the educational system – the traditional and the innovative. Taking into consideration the reforming in National Ukrainian educative system and contemporary tendencies of world integration, the development of skillful personality is the prioritize task.

By the National educational curriculum, medical students have to learn medical disciplines within 6 years of pre-graduate (pre-diploma level) education, and up to 6 years of postgraduate education depending on the specialty (fellows-in-training). The main clinical discipline is internal medicine that included narrow subject like infectious diseases pathology. Furthermore, problem-based approach in studying of infectious diseases is very useful. Since, here authors conduct analysis of possible ways for development of leadership of medical student at undergraduate level as well as highlighted the most important methods to improve creative thinking of personality, which is necessary for successful carrier.

Nowadays, effective learning being the most important to provide the achievement of main education tasks. In this regard, the need for formation of a new social status and role of the teacher, the study of dynamic variables professionally important qualities in the analysis of new features as high quality specialist solution measures to improve the quality of education [1]. This determines the objectives and performance standards of medical education within the system ECTS, in which the key role is played by the teacher. This task is specified in the transition to innovative medical professionals training profile. The high social significance of teacher, on the one hand, and the lack of science-based interpretation of its social role in all stages of professional development, on the other hand, generate theoretical and practical study of the demand for this key figure in the system of medical education [2].

Moreover, interactive learning methods implemented into educational process, and this technology is popular in Great Britain, USA, Germany, Denmark, and nowadays in Ukraine too. One of them is «case study» as method of analysis of real situation, which encourages students to think and take an active position with leader behavior. This method like one famous of the possible innovative technology include concept of development of intellectual abilities [3].

## AIM OF THE STUDY

To analyze the role of creativity in medical education, and to emphasize on the routine and the best used ways for a development of leadership skills; to share the own experience of strengthening of a leader skills with non-Ukrainian medical students at the Department of Infectious diseases and Epidemiology of Higher state educational establishment of Ukraine «Bukovinian State Medical University».

## MATERIALS AND METHODS

Present investigation designed as descriptive analysis based upon the own experience have been since 2005 till 2015 with undergraduate foreign medical students who studied disciplines «Infectious diseases» and «Epidemiology of Infectious diseases», «Tropical Medicine and Clinical Parasitology» at the Higher state educational establishment of Ukraine «Bukovinian State Medical University» (Chernivtsi, Ukraine).

## RESULTS

Recently, at the highest state educational establishment of Ukraine «Bukovinian State Medical University» medical profession got more than a thousand young people of Asia and Africa. Annually at the Department of Infectious Diseases and Epidemiology hosted at Municipal Clinical Regional Hospital of Chernivtsi (Ukraine) up to two hundred foreign students studying tropical medicine and clinical parasitology, HIV-infection/AIDS and other infectious diseases today that are re-emergence due to globalization. Basic practical skill is supervision of patient at the stationary during clinical curation. There are multifold tasks for medical student at 5<sup>th</sup> year at the pre-diploma level: firstly, to reliably determine the genesis of infectious illness; secondly, to diagnose the mechanism of infection; thirdly, to form a likely preliminary clinical diagnosis taking into account the available supporting and guiding syndromes and symptoms. «Recognition of the disease by appearance is a spark of God, by listening is an extraordinary skill, by questions is an agility, and by the pulse characteristics is an art», – the ancient Chinese doctor Pian Chiao said once upon a time in VI BC.

Creative thinking for student getting medical education included fluency and speed of making decisions with originality, flexibility and imagination. Routine practical lessons when medical teacher being only translator of knowledge nowadays and in the proximity future totally changed to implementation of new innovative education paradigm, when medical teacher is moderator and coordinator of cognitive processes by medical student [4].

Initially, it needs to emphasize separately on the ways to improve creative and leader thinking. Nevertheless, the aspects of implementation of a few methods used with pre-diploma level medical students discussed here. Within learning of educational discipline «infectious diseases» with foreign medical students on 5<sup>th</sup> year of their curriculum, the «brainstorm session» way helps for teacher focused attention of audience on the acute and actual extreme clinical problem of internal medicine.

Brainstorming method useful in all stages of a larger problem-solving process, brainstorming is entirely divergent. The object of a brainstorming session is to generate many and different kinds of ideas without interference from judgment, whether such evaluation is positive or negative. The results of a brainstorming session can be improved by presenting a well defined problem along with sufficient but not too much background information. Results can also be improved by inviting a mix of participants who can offer as many divergent points of view as possible. Moreover, sudden approach revealed the high speed-thinking students, because speed is the hallmark of creative genius. Positive is that speed and fluency of thought can be improved by practicing with special interactive games [5].

Case study method in particular when learning human infectious pathology give possibility to detailed study individual natural story case of a patient closely related to real life situation. When teacher «open up» a new case studentship start to discuss it actively and, usually, non-formal group leader with high speedy thinking start to generate ideas according to given questions.

Next interesting method for improving thinking is SCAMPER. It is an acronym for seven thinking techniques that help those who use them come up untypical solutions to problems. [S] – substitute, means remove some part of the accepted situation, thing, or concept and replace it with something else. [C] – combine, means join, affiliate, or force together two or more elements of your subject matter and consider ways that such a combination might move you toward a solution. [A] – adapt, means change some part of your problem so that it works where it did not before. [M] – modify, means consider many of the attribute of the thing you are working on and change them, arbitrarily, if necessary. Attributes include size, shape, other dimensions, texture, color, attitude, position, history, and so on. [P] – purpose (put to other use), modify the intention of the subject. Think about why it exists, what it is used for, what it is supposed to do. Challenge all of these assumptions and suggest new and unusual purposes. [E] – eliminate, means arbitrarily remove any or all elements of your subject, simplify, reduce to core functionality. [R] – reverse, means change the direction or orientation. Turn it upside-down, inside-out, or make it go backwards, against the direction it was intended to go or be used. [R] – rearrange, means similar to reverse, modify the order of operations or any other hierarchy involved.

Micro-reality method also called as 60 second method and is useful for critical, analytical thinking and problem-solving, team communication, creative and innovative thinking, leadership and decision making, leadership development, product and process improvement, and project management.

Lateral thinking is a deliberate, systematic creative-thinking process that deliberately looks at challenges from completely different angles. By introducing specific, unconventional thinking techniques, lateral thinking enables thinkers to find novel solutions that would otherwise remain uncovered. Lateral thinking focuses on what could be rather than what is possible and centers around four directives:

- Recognize the dominant ideas that polarize the perception of a problem;
- Search for different ways of looking at things;
- Relax rigid control of thinking;
- Use chance to encourage other ideas.

Creativity of professional (clinician/teacher/ etc.) could include:

1. Doing practical things, which make a difference where the process may not be straightforward, e.g complex surgery;
2. Making decisions in a clinical setting, which require creative thinking; drawing on multiple sources and meanings, identifying priorities, different perspectives and levels of uncertainty;
3. Developing practice within a department towards making «best» use of limited resources;
4. Developing teaching provision in a reflexive manner, responding to changes, observation, feedback and new opportunities: writing, thinking up new ideas (these last two are often linked), producing/presenting work, and generating discussion, anything that involves mental struggle;
5. By drawing on their imagination daily to understand patients, and when not doing so usually indicating fatigue or more seriously «burn-out»; by responding to many different «cues» when making diagnoses and thinking laterally or divergently rather than the converse;
6. Creative with research – new ideas, new collaborations, new applications of existing techniques/knowledge, recurrent rethinking of possible causes etc;
7. Creative with people/relationships (clinicians) – always having to reconsider how, who, why, where, when in diagnosis, also in some specialties a specific creativity of insight into use of the doctor-patient relationship to the best, most therapeutic effect. This includes a creative use of the interpersonal self, which is akin to taking on different roles to adapt to the needs of others.

## DISCUSSION

Providing leadership training at a younger age will help individuals avoid acquiring and reinforcing bad habits while also giving them significantly, more time to practice and hone their abilities on a daily basis. Thus, within pre-graduate curriculum medical students of the faculty «Medical Doctor» have be able to study at «School of leader» according to extra-class timetable – once in a month since first year of curriculum. Moreover, till 5-year, while learning medical disciplines «Infectious diseases», «Epidemiology of Infectious Diseases», «Tropical Medicine and Clinical Parasitology» every student has possibility to express the best personal leader skill for organize with student team mini-conference, active event as Round Table, and participate in poster session competition. Topics for mentioned above events dedicated to WHO highlighted the International HIV/AIDS day (December 1), the International malaria day (April 25), the International Rabies day (September 28), the World Hepatitis day (July 28) etc.

Thus, the role of a creative thinking for undergraduate medical student is a crucial asset of effective management of all obligations. A development of leadership skills must be an important and outstanding goal for future medical doctor. To cope with it numerous learning methodic have recommended brainstorming method, case study method, SCAMPER, lateral thinking and micro-reality method. There are minimum up to ten different coherent practices available for clinicians within their daily professional routine work. Discussed this point, it should be highlighted the student. Competition and thematic self-organizing Round Tables devoted to International Health Issues problems such as Malaria, HIV/AIDS, Rabies, Viral hepatitis C, Poliomyelitis, Immunization Week, etc. The mentioned above are the most popular and actively supported by the World Health Organization (WHO) and European Center of Diseases Control (ECDC).

## CONCLUSIONS

1. Highly creative thinking or «out of the box» is one of the most necessary skill for a leader in medicine because of necessity to solve urgent clinical problems. Next methods for development of creativity could suggested for implementation to the teacher experience within educational process: brainstorming session, case study, SCAMPER method, micro-reality method, lateral thinking method and it combinations.
2. Equally important is a wide implementation of leadership program into curriculum within pre-graduate and postgraduate level of medical education. The own teaching experience within 2005–2015 with foreign medical students, mostly from India Republic, Ghana Republic, Nigeria studied on 5<sup>th</sup> year at the department of Infectious Diseases and Epidemiology of Bukovinian State Medical University of Ukraine have been demonstrated an effective development of student creative thinking. Under those circumstances, extra-class self-organized Round Tables, mini-conferences and poster session competitions aimed to encourage a student to express his the best personality and leader skills as responsibility, flexibility of cognitive process, self-confidence, integrity, honesty, personal magnetism.
3. In fact, the betterment of educational curriculum for pre-graduate medical students by means of addition to it certain «Leadership program» is recommended by time challenge nowadays, as well as the next supporting of residents and fellows-in-training at the post-graduate medical education level. However, curriculum innovation can be successful only with simultaneous reforming of entire Ukrainian public health care system.
4. Really teacher is teaching from heart, not only from a book; since respectful teacher must demonstrate the best leader creative thinking skills – honesty, delegation of obligations, communication, confidence, commitment, positive attitude, creativity, intuition, inspiration, individual approach, integrity of team to achieve a main goal.

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