

1.4 Education in the medical university: quo vadis?

Aut viam inveniam aut faciam

(Keep pursuing your goals no matter what obstacles stand in your way)

The university, from the greek word “universitas” – means community of teachers and scholars (in latin “universitas magistrorum et scholarium”), and only deep and grounded collaboration between teachers staff and studentship is essential for both sides of this steady constant process.

Personality of a teacher in a high educational institution should be especially many-sided and reputable. As Warren Buffett said *“Seek in people these three the most important features: intellectuality, energy and honesty. If there is no presence of the last, the other two are not necessary at all”*.

When we are referring to the medical education in any university we must emphasize that qualitative study of medicine is of crucial importance nowadays in terms of the worldwide pandemic of SARS-CoV2 infection or future biological threats and risks in the present 21st century.

Medical education should be of high quality because of its correlation with the health and life of any human. In spite of it, the problem of professionalism in contemporary medicine still is not completely cleared. The training of future specialists should ground, first, upon the gaining of theoretical knowledge and mastering of practical skills on the pre-diploma level of education.

Medical university should be the place with strong leaders among teaching staff who can fruitfully collaborate with medical students to manage their time and efforts for the achievement of the best and continuous result – to find their own destination and to serve the society as medical doctor/physician/nurse etc.

Currently, the concept of reforming health care education in Ukraine has been determined since 2015, and now in 2022 this is clearly defined as the purpose of the reform. First, it is the compliance of the medical education system in Ukraine with the requirements of the practical sphere of public health, as well as improving the quality

of medical training by introducing an effective system of organization of the educational process. These processes should contribute to the harmonization of national medical education with requirements of the European Union. Only this can help to promote and realize student mobility international exchanges programs.

In Europe, the most difficult and costly is training for the healthcare system. Generally, medical education obtained in three stages in a combination of theoretical course and practice:

- Undergraduate medical education – at least six years; requirements: National educational standards, standards of higher medical pharmaceutical education.

- Postgraduate medical education – from two to ten years; requirements: educational standards, official ministerial documents, medical care standards (protocols of treatment), observership, mastership trainings, etc;

- Continuous professional development – from ten to forty-fifty years, and is professional lifelong; requirements: mental cognitive health, willingness for self-improvement, official ministerial standards, medical care standards and scientific worldwide achievements, patents, international healthcare innovations.

The development of Ukrainian medical education, which is aimed at training highly qualified physicians, must meet the current level of development of medical science and the requirements of the whole society that is especially important in the global infectious threat – emerging and re-emerging infections which transmit occasionally. It is mainly now based on the implementation of a qualitatively new methodology for organizing the educational process offline and online regimes on the European model; the concept is based on European trends and national strategy [49].

In the current economic unfavorable reality, since 2020 because of COVID-19 pandemic, economic stagnation due to global restrictions and quarantine, the service "training" must be evaluated from the point of view of its safety and quality levels. It is expedient to shed light on the definition of this concept: under quality of medical education, obviously, we understand the high compliance in the provision of educational service in the medical university correspondingly to the level of

professionalism of the medical doctor/nurse/technician, which should completely, meets the modern needs of society [50].

To understand a real situation with medical education at the undergraduate (pre-diploma) level, it is necessary to focus on the main objectives: a sufficient theoretical level of knowledge in medical and biological disciplines and adequate mastership of practical skills trained by students, which are provided by a working educational curriculum [51].

In recent years, there has been a change in educational paradigms from analytical to synthetic, mostly aimed at systemic solutions – digitalization of education. Because the university implements the process of the synthesis of new information through the active work of the carrier – a teacher or lecturer. Currently, the pedagogical process focuses on the self-education of future specialists, it is also important to use information and communication technologies (ICT), which will simplify the development, reproduction and use of didactic sources, and ultimately – to improve the quality of education [52].

Monitoring the quality of educational service in medical schools is carried out through certification and examination of training courses. At the same time, if the theoretical level can become better due to e-learning platforms, then improving the practical training of specialists at the undergraduate level can be realized in the simulation center [53]. Leading European medical schools prefer to practice skills on innovative technologies, mannequins, virtual simulators (phantom, models, etc.), because according to the high-cost health insurance, uncertified professionals without a license do not have access to patients.

Simulation innovative methods are endowed with the physiology of the human body, where under certain factors and manipulations changes in the parameters of homeostasis in any mode had started without the intervention of the teacher. This contributes to the formation and width of clinical mindset of the future physician, meaning the ability to comprehensively assess the diversity of symptoms of the clinical manifestation and instantly make the only correct clinical decision. National medicine is in a long process of reforming, so the complete use of university clinical facilities

should be a priority in order to master the necessary practical skills of students at the undergraduate level [54].

Since 2005, the Ministry of Health of Ukraine has been gradually harmonizing the educational process with the requirements of the European Union (EU) in accordance with the Bologna process. In recent years, there have been changes in the regulatory framework of higher medical school.

It should be noted, that since 2019 at the Bukovinian state medical university the Center of Simulation Medicine has been established, where medical students from forth, fifth and sixth years can master practical skills of normal clinical examination of adult, child, pregnant as well as had practice of medical emergent care in cases of different urgent clinical conditions alone and under tutor supervision.

The main problems of medical education in Ukraine today are lack of university clinics; inconsistency of teaching conditions with the requirements of the time, low level of social protection of teachers and students, etc.

The implementation of changes is hindered by insufficient funding for higher education, a high level of pedagogical workload on teachers [55].

Trend analysis of educational services in the field of medicine has shown a global focus on the development and application of modern information technology ("e-learning", TEN 155, GEANT). The teacher plays a central role as a "carrier" and "promoter" of information competence, the functions of which are the focus of efforts, control of knowledge and skills, as well as advising the student. Accordingly, the emphasis is shifted to self-education, a prerequisite for which is the absolute interest and motivation of future physicians. A truly valuable role in providing quality medical education belongs to the direct work of senior medical students with patients, which deepens the existing clinical thinking.

Probably the standards of European medical education (EN series 4500) can be implemented to optimize the practical training of medical students as a basis for the formation of advanced clinical thinking (the use of robotic simulators with human physiology). Looking to the future with optimism, we can say that quality medical education at the undergraduate stage will soon become not a mythical but a realistic

model of training specialists in the medical field of Ukraine.

In the recent years, there have been significant changes in the public consciousness, which necessitated rethinking of the major trends of education. There are two main areas of the educational system – the traditional and the innovative. Taking into consideration the latest trends in the educational system and contemporary tendencies of global integration, the development of skillful personality is the prioritizing task.

The effective learning is the most necessary to achieve 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 [56]. 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 [57].

Initially, it needs to point on the ways to improve creative and leader thinking. Nowadays, interactive learning methods have been implemented into the educational process and are popular in the USA, Great Britain, Germany, and in Ukraine too. One of them is “case study” as the educational method of deep multi-factorial analysis of real situations, which encourages students to think and take an active position with leader behavior. This method includes the concept of progressive development of intellectual abilities [58].

Creative thinking for students who are getting medical education includes fluency and speed of making decisions with originality, flexibility and imagination. Routine practical lessons when the teacher is only a translator of knowledge nowadays and in the near future totally changed to implementation of new innovative education paradigm, when a medical teacher is moderator and coordinator of cognitive process in medical students [59]. Case study methods in particular when learning human infectious pathology give possibility for a detailed study of individual natural story cases of a patient closely related to real life situations. When teachers open up a new case a studentship starts to discuss it actively and, usually, non-formal group leaders with high speedy thinking start to generate ideas according to given questions.

The Brainstorm method is the most useful method for a problem-solving process. The aim 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. This approach revealed the high speed-thinking students, because speed is the hallmark of creative genius. It is positive that speed and fluency of thought can be improved by practicing with special interactive games [60].

Next interesting method for improving thinking is the SCAMPER method. These are acronyms for seven thinking techniques that help those who use them come up with atypical solutions. [S] – **s**ubstitute, means remove some part of the accepted situation, thing, or concept and replace it with something else. [C] – **c**ombine, 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] – **a**dapt, means change some part of your problem so that it works where it did not before. [M] – **m**odify, means consider many of the attributes 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] – **p**urpose (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] – **e**liminate, means arbitrarily remove any or all elements of your subject, simplify, reduce to core functionality. [R] – **r**everse, 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] – **r**earrange, means similar to reverse, modify the order of operations or any other hierarchy involved. SCAMPER method of betterment of thinking out of the box can be used for both – teachers and students at pre- and post-diploma levels as individual practice or grouped training.

Another interesting thing is the micro-reality method also called the 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. Project management is the most responsible role for a leader and self improvement of one's own creative abilities can move closer the final achievement to the coming reality faster.

One more is lateral thinking, which is a deliberate, systematic creative-thinking process that deliberately looks at challenges from completely different sides. 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 points:

1. Recognizing dominant ideas that polarize the perception of the problem;
2. Searching for different ways of viewing of things;
3. Relaxing of rigid control of thinking process;
4. Using chance to encourage other ideas.

Thus, a creativity of a professional (a clinician/a teacher/ a student) could include next things:

1. Doing practical things, which make a difference where the process may not be straightforward;
2. Making decisions in a clinical facility, which require creative thinking; drawing on multiple sources and meanings, identifying priorities, different perspectives and levels of uncertainty;
3. Developing a practice towards making the «best» use of present limited resources;
4. Developing teaching provision in a reflexive manner, quick responding to changes, an observation, a feedback and new opportunities: writing, thinking up new ideas, producing and presenting of a work, as well as generating the discussion, that involves a mental struggle;

5. A creativity with a research – new ideas, new collaborations, new applications of existing techniques or/and knowledge, recurrent rethinking process for a deep analysis;

6. Creativity in conversation and communication with people: reconsideration – why, how, who, where, when –in the doctor-patient relationship to the best, the most therapeutic effect, to adapt to the needs of others.

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. The role of creative thinking for undergraduate medical students is a crucial asset of effective management of all obligations.

Thus, the development of leadership skills must be an important and outstanding goal for future medical doctors. To cope with it numerous learning methods have recommended brainstorming method, case study method, SCAMPER, lateral thinking and micro-reality method.

Highly creative thinking or «out of the box» is one of the most necessary skills for a leader in medicine because of the necessity to solve urgent clinical problems. Next methods for development of creativity could be suggested for implementation to the teacher's experience within the educational process: brainstorming session, case study, SCAMPER method, micro-reality method, lateral thinking method and its combinations.

In fact, the betterment of the 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 support of residents and fellows-in-training at the post-graduate medical education level. However, curriculum innovation can be successful only with simultaneous reforming of the entire Ukrainian public health care system.

A real teacher is teaching from the heart, not only from a book; since a 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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Residents in a hospital and junior doctors must develop leadership skills within their daily routine practice as well as participation in medical conferences with a clinical discussion session with colleagues and active effective communication and collaboration with them.

It should firstly be referred to today to the ancient philosophy and religion where we found the phrase “The mind is everything. What do you think you become” – Buddha. Self-improvement of professional life really is very tightly connected with inner harmony and peaceful strong mindset to serve the people as medical physicians.

Medicine is an art and was taught as one up until about a century ago. Clinical practitioners are creative in using their skills of observation and intuition to make diagnosis and in suggesting treatments that may go beyond science. A practitioner, like a writer, has to be “someone on whom nothing is lost” (H. James) and in this way mirrors the creativity of the artist.

There are multifold tasks for junior doctors, residents of the clinical division and fellows-in-training. Basic practical skill is the supervision of a patient at the medical facility and his clinical examination, filling in medical paper documents etc. “Recognition of the disease by appearance of a person is a spark of God, by listening to the person is an extraordinary skill, by questions is an agility, and by the pulse characteristics is an art”, – the ancient chinese doctor Pian Chiao said.

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 their abilities on a daily basis.

Many leadership programs already exist and are widely used in the postgraduate level of medical education. In Great Britain, for example, «Leadership and

Management for All Doctors» program is provided by the General Medical Council. Being a good medical doctor means more than simply being a good clinician. In their day-to-day role, doctors can provide leadership to their colleagues and vision for the organizations in which they work and for the profession as a whole. However, unless doctors are willing to contribute to improve the quality of medical service and to speak up when things are wrong, patient care is likely to suffer. That doctor guidance recommends management and leadership responsibilities of physicians in the clinical facility, including:

- a. Responsibilities relating to employment issues;
- b. Teaching and training;
- c. Planning, using and managing resources;
- d. Acting on concerns;
- e. Helping to develop and improve medical service.

A physician mindset like “out of the box” is principally a necessity for progressive and innovative medical practice at the post-graduate level for fellows-in-training.

Medical practitioners mostly at the postgraduate level of medical education are creative in a numerous of next ways:

1. Through their communications with patients and their relatives;
2. In communication with other members of their interdisciplinary team;
3. Teaching / coaching;
4. Determining referral pathways;
5. Their own further education, which may be unique to them;
6. Diagnosis, choice of diagnostic tools and the way they are used.

Thinking «outside the box» in patient care with nurses seems to translate to ways of providing care tailored to the needs of the individual patient.

- ✓ Going against the rules;
- ✓ Sourcing resources;
- ✓ Making innovative use of scarce resources;
- ✓ Systemic thinking in a team.

Perhaps creativity needs greater definition, and activity must vary between practitioners. A creativity of a professional (a clinician or a teacher) should include:

1. Doing practical things, which make a difference where the process may not be straightforward, for instance, 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 the «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.

Current unfavorable epidemic situation and pandemic changed our professional life so much and trends in distant formats began our new reality. Teaching in medical school temporarily became distant. And this fact is very sad. Potentially this is very dangerous for education on the post diploma level and senior pre-diploma because of difficulties in the formation and development of clinical mindset.

National lockdowns all over the world – in Ukraine, in the Republic of India, Nepal,

in African countries and in other countries of Europe aimed to stop SARS-CoV2 distribution from real human-human conversation and interaction. Social activity became restricted and special rules of social distancing had been recommended and implemented [61].

So far, Kathmandu University has instructed its affiliated institutions to run online classes for students so that there would be no lag in the academic calendar. Ten medical schools affiliated to the university are scattered all over Nepal, enrolling 100 students each year for the bachelor's degree in medicine.

Some popular web portals like Zoom and Skype are being used for teaching and learning purposes, and provide platforms with free access so that one can sign-up and schedule a meeting (online class) with about a hundred students. Presentations on the screen can be shared among all the viewers, who can simultaneously watch the same screen. The video conference can also be recorded and saved. There are onscreen whiteboard tools too, which can be used as the classroom blackboard within explanation of pathogenesis or clinical presentation or treatment of a given medical topic [62].

Nice experience of virtual classrooms, seminars and practical sessions were well organized also in Qassim University with medical colleges. Online platforms powered the virtual learning sessions that were used in collaboration with different health colleges in Qassim University, such as dentistry and nursing colleges [63].

Modern innovative educational technologies provide a great opportunity to continue the curriculum in spite of unpredictable international events. A teacher-student collaboration via the internet aimed for the same result – improve the present and gain new knowledge. In medical school, it is very hard, because medicine is an art of healing and clinical work with patients.

The main clinical discipline in the curriculum of fifth year of study in our medical school is internal medicine with infectious diseases. Furthermore, a problem-based approach in learning of infectious diseases is very useful. This determines the objectives and performance standards of medical education within the system ECTS, in which the key role is played by the teacher. Teachers of medicine and medical

students become separated by a place but not a time. Due to technological progress and internet access, teacher-student communication is available.

Unfortunately, for studying medicine this is quite ineffective. Real conversation, eye-to-eye explanation, and emotional intelligence can be reached by personal collaboration only.

Since march 2020, in our medical school teachers have tried to use available online educational platforms and combine traditional pedagogics and principles of their own experience in teaching of infectious diseases with new situations.

Practical on-line sessions with foreign students in the form of Hangouts Meeting by means of Google support could really become quite a nice alternative to traditional practical class, especially in conditions of national quarantine in Ukraine, for instance.

Each practical online session of distant learning was starting up from a brief introduction about current infectious disease situations worldwide by means of official evidence-based sources like WHO depend on the region.

Within the last five years, Bukovynian state medical university has an online platform Moodle with essentials from all educational disciplines, including infectious diseases. Such distant learning educational platforms became very useful and popular among specialists, meanwhile medical distant courses are not the best opportunity to improve one's own practical mastership. To reach this purpose only offline training courses can really help to master them in clinics.

Current century is characterized by the appearance of emergent biological events in the human population worldwide. Hopefully, this temporary epidemic worldwide situation will improve very soon and the qualitative educational process will continue with new technological educational skills of both side participants – teacher staff and students.

Changes in the world are unpredictable, infectious diseases may spread very fast as pandemics have an impact on real life and the education process. Modern innovative educational technologies provide a great opportunity to continue the curriculum in spite of unpredictable international events like the COVID-19.

Negative side of distant learning is absence of real patient vivid contact that is

necessary to do objective examination. This negative side or obstacle could be canceled in case of “standard patient” technology. Teaching of medicine is impossible without contact with real patient clinical pathology. Teaching infectious diseases in a stationary-like clinical hospital basis is essential for fifth year medical students.

Student-teacher collaboration via internet access can achieve the same result – improve present knowledge and gain new important knowledge with formation of clinical thinking towards differential diagnostics between infectious diseases with similar syndromes, make plans for laboratory diagnostics and understand fundamentals of therapy of the disease. But unfortunately, education of medical students should be exclusively in the clinical center, university clinics or in any other facility with patients. It's crucially important for the development of clinical wide thinking of future specialists.

Postgraduate medical education in the professional life of young doctors, residents and doctors in training are crucial, important and necessary to stay with trends in diagnostics and therapeutic tactics.

Globalization of medical education at the pre-diploma and post-diploma levels can rejoin all medical specialists of a certain specialty together into one big professional community, which can form such a structure as an association. Role of medical association in the professional life of a separate specialist is very huge and important because this can give to him constant support in the solving of different clinical situations to provide a taking of the best clinical solution. I personally believe in high level qualitative educational and organizational support from the side of the association. Postgraduate support is essential with observership and fellowship and training in the departments and clinics with new technologic equipment.

Bukovynian state medical university has established the Association of Alumni with the largest students' Indian community. It aims to provide educational support too as well as feelings of big university families around the world.

The development of leadership skills in doctors in training is essential to support both their professional development and the future supply of clinical leaders.

In recent years, there have been significant changes in the public consciousness,

which necessitated rethinking of the major trends of education [50]. After analyzing the domestic and international experience in organizing training activities, it can be concluded that at the present stage, there are two main areas of the educational system — the traditional and the innovative.

The main goal of the modern innovative education can be as follows:

1. The development of the abilities required for the person and society;
2. Preservation and development of creative potential;
3. The inclusion of the individual in a holistic social activity;
4. Providing opportunities for self-realization of the individual.

One of the key features of innovative education is to implement competency-based approach, which involves the development of the student specific competencies. Universally accepted definition of competency in modern science does not exist, but many scientists emphasize that “competency” is a complex concept that includes both knowledge and skills, and abilities [64].

Distant education in 2020 became reality for all education systems due to the unpredictable pandemic of emergent infectious disease caused by SARS-CoV-2 virus [65].

Bukovynian state medical university already teaches foreign students from all over the world, there are a great number of young generations of doctors of different specialties. Pandemic of COVID-19 in the end of 2019 started from China and spread to all countries, change educational concept to the side of virtual and distant even more than ever in the XXI century.

It is notable and very honorable that our graduates from Republic of India – alumni of Bukovynian state medical university, had the highest positive scores of passing the Indian border state medical exam among all medical institutions in Eastern Europe. In general, within years of teaching different medical disciplines for foreigners in the English language our teachers’ staff became certificated and skillful.

Thus, we had implemented the idea to start to deliver an online distant lecture course about COVID-19 and interdisciplinary issues about this newly appeared emergent viral infectious disease. The working group was established from five

specialists: infectious disease specialist, general practitioner, intensive care specialist, pulmonologist, and dermatologist. Our course of virtual lectures consist of initial lectures “Clinical and pathogenetic up-to-date aspects, laboratory diagnostics and current approach to treatment of COVID-19 patients”. Second lecture dedicated to “Current approach to COVID-19 patients with comorbid pathology”. Third lecture was given about “Comorbidity of tuberculosis and COVID-19”; fourth lecture was about “Evidence-based approach in intensive care of COVID-19 positive patients”; and the fifth about “Skin manifestation of COVID-19 and differential diagnosis”.

It should be noted about one of the most popular virtual educational tools as the ZOOM conference, which we used to combine physicians from Republic of India and lecturers professorship staff from Ukraine. Total duration of this lecture course for alumni of Bukovinian state medical university was 10 hours with nearly hundred of listeners/participants on every lecture in the format of webinar with dialogue, questions and answers session, chatting and real time translation through ZOOM meeting.

To sum up, such newly implemented virtual educational webinars as a series of online lectures about current, modern evidence-based approaches to COVID-19 patients given by lecturers, experienced and young motivated teachers have been positively evaluated by participants from Republic of India, young doctors, and our alumni. Positive feedbacks suggest the further development of innovative educational concepts in coming times in spite of worldwide epidemiologic situations.

Postgraduate medical education is essential and very important for medical doctors, especially in the times of newly detected and emergent infectious disease. Since information is changing every day with new facts and data, monitoring of the based evidenced scientific papers should be used as fundamentals for creation of the core of the lecture-webinar. It should be especially valuable to share your own clinical knowledge and cases, and vivid dialogue with listeners as questions-answers within the webinar can make the lecture more emotional comfort with the audience.

Teamwork among all members of the working project group should be competent based, polite, strong motivated and with self-criticism as well as able to be artistic and laconic within delivering and translation of the webinar. Feelings of staying in touch

with the virtual lecture hall and all listeners can help a lot and improve prior lecturer experience.

Implementation of the first virtual project of webinars lectures “Current issues of COVID-19” in the Bukovinian state medical university for physicians of Republic of India had positive evaluation and feedback that motivated for future improvement of such educational support at the post graduate medical education level.

Next important issue I would like to highlight is to describe the model of advanced education or educational triple spiral. Methodological basis of it consists of complex theoretical and empirical methods of scientific cognition, including methods of idealization, modeling and comparison. Firstly this concept was developed by Henri Etzkowitz from Stanford University well known in business also as Triple Helix Model. But let's prior analyze modern data after investigation of articles according to innovative models of pedagogy.

There were many attempts for creation of successful models of innovative education by the content for globalization of education. Famous English economist Roy Rothwell after analysis of industrial management within the last half of century had revealed five generations of innovative models: model of technology push (G1), model of market pull (G2), feedback model (G3), integrated model (G4), cyclic innovation model (G5), developed by the establisher of European center of innovation Guus Berkhout [66].

All these models were logically changed and nowadays we had the best concept of innovative model – top innovative model – Triple helix model. The principle of this model is based on the tight interaction of university, power/authority and business. This triple helix model is describing such interaction of university, pome and business on the each stage of creation of innovative product: at the primary level of knowledge generation for interaction between power and university, and later – within transferring of technologies into business, and finally there will be implementation of result into the market for a population [67].

In spite of the presence of this model, it still is not totally and absolutely used in society. Knowledge-based society is an innovative society that is founded on the

conception of continuing education within all life. This kind of society combines societies of scientists, investigators, engineers and technicians, investigative nets, and also production of high technology goods and services (from the report of International Council for Science, UNESCO, 2003). The main resource of knowledge-based society is a human, trained for a participation in processes of creation of knowledge and their practical implementation with creative approach and realization in life.

Such a person can only be prepared by an effective system of education, looking forward to the future. As a result of such systemic informative action on the person we can get the formation of the system of contents according to the actual or potential situation of things in the world. The above consists of three processes: teaching, socialization and acculturation. The informational activity on a student and their result is as a system of degrees. Moreover, learning is the main task of education. Systemic learning activity is providing intensive development in their subjects of theoretic thinking with their main components as generalization, abstractions, analysis, planning and reflection. Corresponding educational environments are especially important to realize the studying process as well. During this process people meet each other for discussion and exchanging of ideas. Different points of view allowed generating new ideas that lead to better understanding of proper innovation: from space of knowledge through space of agreement to space of innovation.

Result of the functioning of such a triple spiral can be named as human capital by Stanly Fisher, as a totality of competences, which is used for satisfaction of various needs of human and society in general. Later, within interpersonal communication the interaction of socialization and acculturation had been expressed. All these together can do a great favor for science, art, moral and law to open higher levels of education. Thus, the first wind of this spiral trajectory of personalized education has been formed.

I would like to highlight all winds of spiral trajectory of personalized education (by triple helix model):

1. First - simple conferment (appropriation) in microsociety with use and implementation of ostensive learning forms;

2. Second – reproductive learning activity in mesosocium with use and implementation of imperative forms;

3. Third – productive heuristic activity in macrosocium with use and implementation of axiological learning forms;

4. Fourth – productive artistic activity in metasocium with implementation of principles.

To sum up all mentioned above about innovative education we should keep in mind all needs of contemporary society, because today we faced to a new concept of formation of futuristic system of education looking forward to conversion of natural human into cultured human by means of triple helix model – as model of generation of innovative personality that open the way to the getting and renovation by a human all necessary professional knowledge and skills for higher cultural level and improvement of intellectual personality characteristics.

Educational Triple Helix Model can be used as the foundations of Global education, which will include such interdisciplinary areas as the perception and understanding of other worldviews (perspective consciousness), clarifying state of the planet awareness, cross-cultural awareness, systemic awareness, options for participation. This model is the model of generation of innovative personality, opening for it the way to the future.

Next important chapter of this monograph is dedicated to the communicative activity of teacher and / or a student, like two sides of interaction within the education process.

Communicative competence is basic and is a complex and different sided process. We can distinguish main structural components of communication: subject of communication, need in communication (for self understanding and self evaluation), communicative motives (an aim of communication), actions of communication, tasks of communication, means of communication and final product of communication (formation of material and spiritual products).

A.Mudryk suggested five aspects of training for communication: 1) development of peculiarities of thinking; 2) formation of habits of free speaking; 3) development of

certain peculiarities of personality – empathy, communicability, spontaneity etc. 4) formation of certain settings for qualitative resulting communication like attitude to a partner, interest in communication, tolerance, lenience, forbearance; 5) development and formation of new communicative skills. Indeed, communication is systemic and integrated.

Teaching staff should always constantly support students for originality and usefulness of ideas (trace for students getting satisfaction from their own artistic communicative process). Creativity in communication is also the use of body language. Quality of communicative activity depends on the adaptation to the representative system of educators. It is well known that people perceive a world through visual, the audial and kinesthetic representative systems. Thus, communicative ready specialist when is communicating with people must: 1) to formulate a personal aim of contact and define it in the process of communication; to introduce wishing results in the mind for all members of communication; 2) to define features of behavior of a participant, which are criteria of achievement of certain result of communication; 3) to understand self consciousness, experience in perceiving; 4) to use the reserve of methods and means of achievement of desired results of communication; be free in a choice of versatile variants of behavior and communicative tools.