

Problem based learning and traditional methods of medical students' training

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Abstract

Introduction: The aim of our study was to perform a benchmarking of traditional teaching and PBL methods of training medical students. The main goal was to identify what are the gaps and priorities of both methods, and to analyze which of those methods is more suitable and sustainable for our curriculum.

Methods: A benchmarking of the traditional curriculum of training medical students in *Nicolae Testemitanu State University of Medicine and Pharmacy* and PBL curriculum used in Aalborg University was done.

Results: Traditional methods of training used for more than seventy years in our University had proved its sustainability, but nevertheless problem based learning was analyzed as a new challenge for gaining sustainable knowledge base attained by collaboration both in projects and self-directed learning, problem solving, communication and dissemination of information, developing clinical and critical thinking at interdisciplinary level and higher employment opportunities for graduates.

Key words: curriculum, traditional methods, PBL

Introduction

Educational policy is an issue of central interest and a fundamental practice in *Nicolae Testemitanu State University of Medicine and Pharmacy*. Mobilisation of the university community was materialised in the Bologna process that was implemented in Moldova in

2005, with some amendments and additions to the Law on Education no. 547 dated 21 July 1995. Bologna reform was particularly promoted in *Nicolae Testemitanu* SUMPh through the selfless and devoted contribution of university managers, who took the role of experts and promoters of the reform. So far the university managed to change its syllabi and reform its curriculum, to introduce the European Credit Transfer System, to develop and implement the European Diploma Supplement, to structure the academic process quality management systems. One of the main areas of reforms was the organization of the internal and external quality monitoring and evaluation system through the implementation of the Quality Management System in the University.

The standards of the International Organisation for Standardisation (ISO 9001:2008) were implemented in the health education system, which requires regular re-evaluation of the training system according to national and international standards.

After Moldova's accession to the Bologna process, the SUMPh started to develop its own Quality Management System (QMS), which is designed to generate confidence in the capacity of the University to provide quality services (professional development, training, research, design, consultancy, etc.).

Methods

A benchmarking of both traditional and PBL curricula used in training medical students in *Nicolae Testemitanu* State University of Medicine and Pharmacy and Aalborg University was done.

Discussions

Nicolae Testemitanu State University of Medicine and Pharmacy is a higher education institution, which objective is to provide initial and in-service training to medical doctors and pharmacists in Moldova. During the studying process, the University gives each student the

opportunity to become a professional with fundamental and professional training based on the specialisation chosen.

The Regulation on organisation of studies at *Nicolae Testemitanu* State University of Medicine and Pharmacy under the National Study Credit System (NSCS) that was designed as a means to promote the cooperation between the universities to facilitate the academic mobility and recognition of students' studying periods in different higher education institutions.

The forms of learning and teaching provided in the curriculum include: courses, seminars, practical activities, clinical internships, research and individual studying. All forms of studying use interactive teaching methods based on teamwork, communication with students, and their involvement in various events, presentations or demonstration experiments.

The teaching methods used both for the courses and for practical activities are modern with the use of multimedia means, power point presentations, teaching films containing tables and explanatory schemes.

The courses of the Medicine University's programme aim at familiarising students with the main applications of this professional field and their theoretical basis. Each teacher has updated teaching strategies for each course of study that are consistent with the educational programme, student requirements and predefined quality criteria.

All practical activities seek that students are able to work effectively, individually, that they can be actively integrated acquiring the minimum experience needed for each discipline.

The main learning methods practiced at disciplines during the university training are:

Traditional: enunciation; conversation; demonstration method; observation method; work with the textbook and teaching sources; exercise method; algorithmisation; teaching modelling;.

Interactive methods and techniques of undergraduate training: icebreaker; group work method; multi-process assessment; contradictory sequences; brainstorming (oral); brainstorming (written); guided discussion; the “I know - I want to know - I have learned” method; docimologic test/interactive evaluation; case study; group project; presentations; reading in pairs; summary in pairs; conceptual chart, etc. Students are involved in teaching (questions, short presentations, and demonstration experiments).

Being a University with great traditions in preparing medical specialists and the only one in the Republic of Moldova it is more difficult to develop a suitable framework for a PBL curriculum, because in our University there are many departments and an impressive amount of teaching staff, over 1000, and the number of students in a group in the preclinical years is about 15. We are aware that for implementing PBL the departments have to go under transformation and to start a totally new approach in teaching and assessment [Alexia Papageorgiou et al., 2015].

Nevertheless, our medical school was always open to challenges. An attempt to implement PBL was done at the beginning of the second millennium by the Department of physiology which was a pioneer in the development of new methods and new approaches in studying medicine. Unfortunately at that time the University curriculum was not so flexible and implementation of PBL in other disciplines failed.

Many changes have been done in the University since that time and new technologies have been implemented, but even now there is still a great challenge to develop an applicable curriculum for PBL in medicine.

Today the main responsibility of a teacher is to design student-centred methods and learning environments, with less focus on the traditional responsibility to only transmit the information. The relationship between the student and teacher is a partnership, where each takes the responsibility to achieve the learning outcomes. In those respects we are quite close

to PBL methods of teaching, when the instructor is only a guide for students in learning process, and achievements of each student are on its own responsibility. Anyway working in a team and shearing knowledge and ideas would lead to a new developmental level and the final result would be the expected one.

Our teachers are specially trained in teaching and evaluation through internships in Psychopedagogy, Docimology. The internships take place through courses held at the Department of Pedagogy, internships abroad, inviting experts and partners of the education system: ProDidactica Centre, CIDMEF Evaluation Council. As a result of those internships, interactive methods were implemented (PBL at some departments, simulation and practical skills development) in the curriculum; and modern assessment methods were implemented in medical education by balancing the teaching and evaluation system. The selection of time and suitable methodology for assessing students has been optimised.

The University has developed study programmes focused on student-centred learning that provide the opportunity to choose individual educational paths by selecting optional courses within a given faculty. The education programme provides individualised learning pathways adapted to the individual skills of students that help with their professional validation enabling the professional focusing on the major areas in Medicine (medical, surgical, paraclinical/research specialties) since when they are at the Faculty. Students have the possibility to enrol to scientific clubs organised by departments, as well they have the opportunity to choose optional disciplines according to their field of interest.

Educational programmes are renewed and are based on the ongoing dialogue with graduates, employers and other stakeholders; the curriculum is detailed, and topics and bibliography are published before the beginning of the academic year.

Courses are structured so as to combine theory and practice and to facilitate the work of future graduates in public health systems.

At the Faculty of Medicine, there has been and still is a tradition for continued concern to develop the curriculum based on the correlation between the learning outcomes and academic qualifications in the context of training students for liberal professions, regulated in general and at sector level, and for the free movement of the person and for practicing the profession.

Syllabi are relevant to the curriculum cognitively and professionally, they meet the current level of knowledge in the field. The cognitive and professional relevance of study programmes is defined based on the development pace of knowledge and technology in the field, market demands and qualifications. Students are given the opportunity to choose courses in medical and surgical specialties or courses to develop their communication skills with patients according to students' skills and desired personal development path.

The teaching activity in the SUMPh aims at meeting the requirements to apply modern teaching/learning/assessment methods. Teachers develop a course based on the background study data, by taking into consideration the correlation with other courses in terms of content, methods etc., the direct participation in correlation analyses organised directly by the dean's office or by specialty teachers.

Nicolae Testemitanu SUMPh ensures the monitoring and measuring of educational processes through regular evaluation activities. Processes are monitored and measured to assess the performance achieved by following the teaching process of a curriculum; to strengthen internal control mechanisms, which helps to implement a strategy for ensuring and improving internal communication between the teacher and student (doctor resident/post-residency physician); to provide relevant information to identify improvements and changes in specialty training offer.

Education reform in the SUMPh implies considerable changes correlated among all its major components: institutional structures, management, curriculum, training, and last but not

least, evaluation. In the SUMPh, the evaluation of education process is a complex psycho-social action based on measurement and evaluation of the results of educational/teaching activities, which allows assessing the quality of education system and aim at increasing the efficiency of education through the relation between the defined objectives and the results achieved by students in their learning process. The educational evaluation system reveals the internal development needs, while its functionality depends on the nature and quality of interactions with other education related systems: curriculum, instruction, training and professional development of teachers.

For implementing PBL there would be necessary to get through a complex process of new reforms, and those changes would not regard only the curriculum, but mainly the academic staff and selection of facilitators might take a while. Transformation of a traditional teacher into a facilitator indisputably would not be so easy, because a good facilitators must have ability to “use questions to probe the reasoning process; to guide or intervene to keep the discussion on a track; help students see connections and tie together information; lead students to examine available evidence when drawing conclusions; set high yet reasonable standards and promote the use of appropriate resources” [Barbara J. Duch and Susan E. Groh, 2001].

The most difficult issue for us is to reorganize the traditional teaching into a PBL model, because the groups of students in preclinical disciplines are large and there are no enough facilitators, but according to other Universities' experience at that stage can be involved floating facilitator selected among undergraduate students.

According to Aalborg University experience the PBL assures a sustainable knowledge base obtained by collaboration both in projects and self-directed learning, problem solving, communication and dissemination of information, developing clinical and critical thinking at interdisciplinary level and implementation of PBL facilitates the employment of graduates.

An important dimension of the study programme in Medicine relates to whether the programme has helped to student progress and is assessed in terms of students' personal development and the fairness in evaluating the student progress.

In recent years, educational methods have been promoted to increase the active involvement of students in their own training by developing the "Student's Guide" which includes the rights and duties of students, the studying guide; activity portfolio that is the main tool for assessing the activities performed by our students during the summer internships.

In clinical disciplines medical students deal with case-studies and we consider that such a model is much closer to PBL. Of course PBL model is very suitable for many domains including medicine, for it creates opportunities of critical thinking development. A clinical approach needs special training skills that are easily developed by working in a team. The PBL gives an opportunity to future specialists to get employed at a higher rate comparing with those students who were trained by traditional methods [Peter Schwartz and Stewart Mennin, 2001].

The trend for critical approach to existing forms of assessment in our University; their standardisation by docimologic principles; development of a set of standardised cases at preclinical and clinical departments; development of a set of standardised criteria for assessment of students' practical works; unification of definitions, classifications and practical skills at interdisciplinary level – centralise the whole training process and foster the study of basic disciplines through education based on practical skills and not only on theoretical ones.

Assessment of students' knowledge and practical skills seem to be confusing when using PBL, because students are studying in small groups and it is more difficult to determine the contribution and involvement of each member of the team. To make the PBL assessment valid and reliable a development of an assessment strategy with clear assessment criteria would be necessary.

One of the priority areas for strategic development of *Nicolae Testemitanu* SUMPh, which is in line with the policy of integration in European structures, is international cooperation, including internationalisation of the teaching and research processes. Internationalisation of the training process has become an imperative of the time, while the internationalisation of higher medical education, given the common object of study of medicine in all countries, is one of the most attractive components of this global process, which contributes substantially to the integration of the University in the European and international education systems, to developing the mobility of students, doctor residents and teachers, and to implementing new methods of training, research, diagnosis and treatment and is essential for institutional development projects.

A reliable confirmation of the above mentioned is the partnership of our University in “Introducing problem based learning in Moldova: toward enhancing students' competitiveness and employability (PBLMD) that open new possibilities for students and teaching staff in gaining new experience for applying new training methods as PBL in our country.

The PBL offers to students the opportunities to develop as self-directed life-long learners, as well they are able to define their individual needs, to search for relevant information and knowledge to solve complex problems. Students take responsibility for their knowledge and they are able to integrate the theory and practice. Another significant issue is the considerations on strategies for future learning. The learning outcomes in PBL are characterized by three main levels that are: knowledge, skills and competences suitable for future engagement as a new specialist.

The students of our University are often involved in research projects, their involvement being materialised through participation in student scientific clubs, conferences and congresses and research awards. By engaging students in research, the Faculty creates the

learning and experience environment that is stimulating them study more issues by themselves.

An important strategic area of our University is the encouragement of partnerships with international academic institutions on priority areas that should be reflected in innovative technology, outputs and services, and provision of conditions for better cooperation and increasing its international visibility by publishing scientific works in prestigious specialised ISI listed publications or in similar publications, with subsequent implementation of the results obtained in the training process.

The SUMPh applies the systematic procedural approach to curriculum monitoring by developing, implementing and improving the effectiveness of the Quality Management System to fully meet the needs of users by identifying and meeting their requirements and expectations.

Conclusions

The higher quality of the educational system is one of the priorities of *Nicolae Testemitanu* SUMPh. Implementation of the PBL course would not be suitable for all the disciplines, because we have to follow the established University curriculum, but some approaches to transform the existing lectures might be possible. The benefit of implementing PBL certainly facilitates employability and exceeds the used resources increasing power and international visibility of a University. The PBL offers to students the opportunities to develop as self-directed life-long learners, as well they are able to define their individual needs, and search for relevant information and knowledge to solve complex problems. The learning outcomes in PBL are characterized by three main levels such as knowledge, skills and competences suitable for employment.

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