

## From *virtual library over dictum and intel* until *refine*: a story about ten-years of reform of medical education in Bosnia-Herzegovina

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The purpose of this paper is to recall how we, medical teachers in Bosnia-Herzegovina (BH), coped with the challenge of reform in higher education and to analyze what in our doing was fashion, which trends we have chosen to follow, and what were the real, substantial and tangible results of our work. Financial support for reform across the board came through the Trans-European Program for Co-operation in Higher Education in Central and Eastern Europe (Tempus), and, since 1997, the five schools of medicine in Bosnia and Herzegovina partnered with academic institutions from nine EU countries in seven granted Tempus projects. The results were tangible: a network of medical libraries was established; medical schools were assessed internally and externally; several important documents were drafted and agreed on; a core group of faculty from Bosnia and Herzegovina was trained in new teaching methods; and research was done and published. Not less important, there were also some less tangible, but perhaps even more important fruits of this cooperation. A sense of trust was established, which is essential for any future collaborative action. Representatives from all sides, previously divided by the war, had a chance to communicate with each other, dispelling some prejudices and regaining belief that it is possible to work together. This example of the schools of medicine of Bosnia and Herzegovina shows that higher education can be a favorable arena for reconciliation. Financial incentive can serve as a catalyst in the process and the presence of impartial partners (in our case, schools of medicine from the EU) proved beneficial for establishing and maintaining trust and good-will. The conclusion is that society rebuilding can be promoted indirectly, through formal education and professional engagement, not necessarily by pressing the “opposing” sides to talk about reconciliation and sign peace declarations.

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## Introduction

Since the end of the past millennium, all over Europe the Academia has been in a state of high anxiety and high fever. The name of the new virus, which is widespread, is well known: the Bologna Process. The recommended cure appears to be a simple one: a substantial reform of higher education. For those who understand the Process seriously, over the Academia is hanging, like the Damosocles sword, a threat of the year 2010 – at that time you will be reformed or you will perish. As a natural consequence, the past decade has seen concerted attempts to reform (or revolutionize) undergraduate medical training. There is no general consensus; advocates for change are still claiming that traditional teaching is old-fashioned and too detailed and produces doctors with skills not sufficient for our world today (1, 2).

The purpose of this paper is to recall how we, medical teachers in Bosnia-Herzegovina (BH), have coped with this challenge and to analyze what in our actions was fashion, which trends we have chosen to follow, and what are the real, substantial and tangible results of our work.

## Curriculum

Apparently, in every higher institution a reform starts and ends with curriculum change. There are many definitions of a curriculum, and we will try to simplify the terminology issues. *The curriculum* is a word originally derived from the Latin: *currere* mean to run, and *curriculum* is literally a race course, referring to the course of deeds and experiences through which children grow and mature in becoming adults. In Academia<sup>1</sup> of today the definition of curriculum is more complex and by curriculum

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<sup>1</sup> Gr. *academeia*, olive grove sacred to Athene, six stadia outside of Athens, in which Plato assembled his students and started teaching. This olive grove belonged to Academos and was accordingly named Academia.

we understand the set of courses and their content, linked together and gradually leading to a degree in science or arts. Therefore, the curriculum could be observed as a main frame on which the educational institutions are built and which represents the expression of educational ideas in practice. Once the curriculum's main frame is defined, we are able to design the detailed course of study or *syllabus*. Certainly the curriculum is not written down and engraved in stone; just the opposite, its peculiar feature is a permanent demand for fine tuning and changes. The majority of schools have an Office of Medical Education and a Committee for Curriculum Reform in permanent session. The curriculum must be responsive to changing values and expectations in education if it is to remain useful.

This is not the end but the beginning of the story: the curriculum devised by academic experts should be readily transformed into practice by the administration and finally experienced by students (or customers, as some in this age of corporate culture prefer to address them). Three quite different curricula have been identified: (i) the planned curriculum, (ii) the delivered curriculum and (iii) the one actually experienced by students (1). It would be far beyond the scope of this paper to discuss all of them or even some more: we will stick with the story about how we initiated the reform of the medical education process, how we designed a new curriculum for all Bosnia-Herzegovina (BH) medical faculties, and ending with the current process of designing a new curriculum for the Faculties of nursing studies.

## Was a curriculum reform in Bosnia and Herzegovina (BH) a luxury or necessity?

Many in academic and non-academic circles would argue that in post-war, politically undefined, unstable, and economically de-

stroyed Bosnia and Herzegovina (BH), there were more important goals to reach, tasks to accomplish, and priorities to follow than the reform of medical education (4, 5). Our reasoning was simple: no society has a future without high-quality education capable of producing fully trained experts in all disciplines. Therefore, society will have to adhere to contemporary trends and developments in education (6). We believed that there was a mutual consensus on all levels in BH that education is the key to any development strategy. Finally, to be honest, each of the universities was exposed to pressures, both internal and external.

### **Internal pressure for reforms**

The authorities of all Medical Schools expressed unanimously their willingness to raise the standards of medical education and to establish a new culture of teaching, comparable with that in more developed countries. There were many reasons for this decision and we will discuss some of them.

#### ***Pride and self-esteem***

It is immanent to human nature to strive to be a part of an institution (movement, project, or enterprise) that is accepted and recognized on a larger scale. It was reasonable to expect that all participants in our project would enthusiastically join efforts with the common goal: to bring the performance of their institution as close as possible to existing European standards.

#### ***Fundamental changes in the essence of medicine***

Secondly, all participants in the educational process are aware that medicine today is rather different from that just a decade or two ago. The same is true for the teaching environment, methodologies, strategies, and tools. Beside, the hopes, dreams, and mo-

tives that attract students to study medicine are different. The most obvious difference is the molecular revolution – not an exotic issue anymore, reserved only for the prophets with a vision and especially gifted. We witness that scientific discoveries are embedded more and more deeply into the routine of everyday medical practice. New technologies reach across the borders of different disciplines, and extend the power of human senses and skills far into the universe of the human body.

As one thing leads to another, medicine practiced in the developed world has almost doubled the human life span in less than a hundred years, significantly increasing the importance of chronic and old age's diseases. These medical areas should be incorporated in every future curriculum. Thus, when defining the curriculum content, educational priorities should be to teach medical students about the chronic status of an ailing old body rather than a detailed account of some exotic diseases.

#### ***Managed care***

Not least important, we are witnessing the domination of “*managed care*,” which is nothing but a euphemism for exclusively profit-oriented medicine. Corporate medical practice, the market economy, and consumer culture are transforming health care (7). There is an unquestionable demand on physicians to rely exclusively on disease management protocols to improve outcomes, reduce costs, and standardize care (8). Personalized care tailored to individual needs of patients becomes a thing of the past. From the Academia standpoint, these changes have dramatically influenced the physician-patient relationship and the moral mission of health care. How should we prepare students to cope with the unbearable increase of hospital costs, be productive under the demand of contemporary hospital management, and still be caring, compassionate, and dedicated physicians?

## **External pressure for reforms**

### ***Pressure from the community***

The pressure of the non-academic world on Academia is growing and rightfully so. Society wants a simple answer to a simple question: is health care (certainly based on good medical education) good enough given the funds invested? The physicians are not unquestioned majesties anymore. The public today demands physicians who respect them, who are able and willing to communicate clearly, and who honor their wishes about health care (8).

### ***Influence of the social environment***

The political structures, with the main and single wish to please the public with the pretext of care for the “common good”, are prone to blame physicians for all evils in the health care structure and increasingly demand “*accountability*” of health care professionals.

### ***Pressure from the “Customers”***

Students and their parents (“clients/customers”) want to know if the curriculum of an institution is up-to-date and comparable to its counterparts around the world. A very simple, yet very important, question is being increasingly asked: “*Is the certificate of graduation received at the end of a long period of hard work and many sacrifices good enough to secure a career worldwide*”(9)?

### ***Bologna process***

Beside this growing “hidden” informal pressure, it will not take much longer for formal pressure to become strong. Over the last ten years, the process that started as informal discussions has become “a must.” All over Europe there is little question if everybody will accept the Bologna principles and recommendations (10, 11), in part or as a whole; the single remaining question is how quick will we

be in the adaptation process. Only those who choose to remain on the *pariahs* side of the world will question this growing dogma – and we do not know many of them (10-13).

### ***Accreditation process pending***

Frankly speaking, in BH – but not only in BH – there are too many Medical Schools with respect to the size of the population and to the financial resources of the country. It is to be expected that a rational country leadership will support the very best among them and withdraw support from institutions unable to play well on the international scene. The Schools that will be able to pass through an accreditation process in the near future will be accepted in respectable company. The principal features of an institution capable of producing the type of physician that society needs and which are scrutinized during any accreditation process are (a) competency to offer the curricula in accordance to European standards, (b) recognition on the basis of its achievements worldwide, (c) eligible partners in European student mobility schemes, (d) fully integrated into the credit transfer system, and (e) linked to the global network (14, 15).

### ***Fashion***

Last, not to be neglected, there is the eternal issue of fashion. We define fashion in medical education as an approach to education that is based primarily on social (or political) influences, in contrast to approaches based on established educational principles and theories, critically evaluated experiences, or the results of valid research. An analogy is the distinction between fashion in clothes (color and style) and the quality and functionality of clothing (material and comfort). Maybe multi-professional learning and multimedia computer aided learning are case studies to illustrate why each should currently be characterized as a fashion rather than informed

practice. Both have received international attention in medical curriculum reform (16).

### **Reform of medical education: what and how we did it?**

#### ***First step:***

#### ***Development of medical libraries***

Mostar Medical School was established in 1997. The priority of the school officials was then to define the curriculum, organize the admittance exam for the first generation of students and elect the teaching faculty for the first year of study. From the very beginning we were aware that an institution without a library cannot exist as an academic institution, and we focused all our efforts on establishing one. Due to the fact that the recent war in BH caused enormous damage to both human and material resources, a library system was non-existent when we started with the project. Mostar was among the cities whose libraries were completely destroyed. In 1998, we submitted a project proposal to the European Commission Tempus program. The project was approved and granted 166,000 €, and the contract was signed in February 1999. In April 1999 we started the implementation of the project. Despite the fact that the project was aimed at the development of a library at Mostar School of Medicine, we decided to invite all medical schools in BH to participate.

Assembling the five University Schools of Medicine in BH in the early post-war period to work together on curriculum reform was a mission close to impossible. The wounds had not been healed and prejudices and suspicions were strong. Still, the academics from the Schools of Medicine exhibited a fair amount of common sense and unanimously decided to join the projects. Strong support was offered from our EU partners, Andalusia School of Public Health, Granada, Spain; Help the Children Fund, Cork, Ireland);

Medical Faculty University of Heidelberg, Germany; Universita degli Studi di Firenze, Italy; Ghent University School of Medicine, Belgium and Semmelweis Medical University, Budapest, Hungary.

We jointly developed the project's concept and objectives, being aware that we had to lean on global information networks and to aim to become a part of the international librarian's "visible colleges," in order to provide users (our teaching staff, students but medical personnel, too) with full and easy access to information, combined with the possibility of interlibrary loans and the acquisition of photocopies at reasonable costs. The main principles of our concept were that;

- traditional, 19<sup>th</sup> century style libraries with huge collections of books and journals are fast becoming relics;

- a library's purpose is not only to house the collection but to provide access to all information needed;

- the library of the 21<sup>st</sup> century is to become a virtual one, it's "collection" and information is not held on shelves but worldwide.

Following the above mentioned principles, we organized the first BH inter-library network. In addition to the initial funds, we received considerable support in information technology equipment, software, books and journals, total worth exceeding one million euros. The full list of achievements was published elsewhere (17-19).

#### ***Next step: curriculum reform***

Working together on the library project, we understood that all BH Medical Schools, from the biggest and oldest to the smallest and newest one, were faced with many, commonly shared difficulties. Although each School proudly claimed that it offered "excellent and state-of-the-art education to students, equal to European standards", we could not tell whether this was true: the indicators and evidence to support such claims were



missing. On the other hand, there was some evidence that medical education in our region could not be considered to be of high quality. Not a single school in the region ever reached the Times list of 500 best medical schools, our graduation certificates are not readily accepted worldwide, the number of international students in BH was lower than 30 or 40 years before, and our students and teaching staff were not included in the European mobility scheme. Thus, the reality was not as bright as we would have liked it to be. Blaming the war and post-war times for all our problems, misconducts, and failures was not a good excuse anymore and obviously, reforms were badly needed.

#### ***Quality of medical education in Bosnia and Herzegovina or how good are we really?***

As a starting point, it has been important to find an answer to this question from the very beginning. In 1999, the Mostar University School of Medicine participated in a self-evaluation exercise within the Association of European Universities (CRE)/Phare-sponsored project “Institutional Quality Assurance” (20). Feedbacks received on the report that followed from this self-evaluation were an useful starting point (21, 22) and strengthened our belief that we needed a substantial curriculum reform.

#### ***Internal and external assessment***

Financial support for curriculum reform across the board came through the Trans-European Program for Co-operation in Higher Education in Central and Eastern Europe (Tempus). At the start of our work, the first task was an attempt to systematically analyze the situation in which BH medical schools work. There were no hard evidences to support the claims we encountered during the initial discussions with the faculty managements, who more or less unanimously stated

(and probably firmly believed) “our medical school is as good and on the same level as European ones, in some aspects maybe even better!”

As an initial experience, an *ad hoc* analysis of the Strength, Weaknesses, Opportunities, and Threats (SWOT), Table 1, revealing the overall status of BH Schools of Medicine helped us gain a better insight into “how good we were” (23).

This work offered a general overview, but in order to support it with hard facts we decided to perform an in-depth self-assessment, followed by an external assessment in each of the schools. Those assessments were done by European experts with respectable credentials. This certainly was not only one of the first such studies in BH but also one of the first such all national-level quality assessments worldwide.

During internal assessment, schools consistently either overrated their overall functioning (Foča/East Sarajevo, Mostar and Tuzla) or markedly overrated or underrated their performance on individual items on the survey (Banja Luka and Sarajevo). Scores for internal assessment differed from those for external assessment. These differences were not consistent, except for the sections ‘School mission and objectives’, ‘Curriculum’ and ‘Development plans’, which were consistently overrated in the internal assessments. External assessments were more positive than internal assessments on ‘Students’ and ‘Facilities and technology’ in 3 of the 5 schools. This assessment exercise in 5 medical schools showed that constructive and structured evaluation of medical education is possible, even in complex and unfavorable conditions (24).

This exercise proved (despite many difficulties, egos hurt and ensuing arguments) that medical schools in Bosnia and Herzegovina have successfully formed a national consortium for formal collaboration in curriculum development and reform.

Table 1 Analysis of strengths, weaknesses, opportunities, and threats (SWOT) of Medical Schools in Bosnia and Herzegovina

Features assessed by SWOT analysis	Banja Luka	Mostar	East Sarajevo	Sarajevo	Tuzla
<b>Strengths</b>					
Teaching in blocks of knowledge	no	yes	no	no	no
Rational use of laboratories	no	yes	no	no	no
Up-to-date library	no	yes	yes	no	no
Permanent survey of students' opinion	no	yes	no	no	no
Extensive use of Internet resources	no	yes	yes	no	no
International projects	no	yes	no	no	yes
Students' exchange program	no	yes	no	no	yes
Good permanent v. visiting staff ratio	yes	no	no	yes	yes
<b>Weaknesses</b>					
Visiting professor dominant	no	yes	yes	no	no
Poor interest of young MDs for basic science	yes	yes	yes	yes	yes
Poorly developed research infrastructure	yes	yes	yes	yes	yes
Lack of space & equipment	no	yes	yes	no	no
Slow Internet connections	yes	yes	yes	yes	yes
Insufficient integration in teaching	yes	yes	yes	yes	yes
Insufficient institutional support	yes	yes	yes	yes	yes
<b>Opportunities</b>					
Awareness of the Bologna Process	yes	yes	yes	yes	yes
Faculty supportive of reforms	yes	yes	yes	yes	yes
New grants from the European Union	yes	yes	yes	yes	yes
Well-established cooperation on the national level	yes	yes	yes	yes	yes
Strong support from European schools	yes	yes	yes	yes	yes
<b>Threats</b>					
Overall political environment	yes	yes	yes	yes	yes
Lack of institutional support	yes	yes	yes	yes	yes
Meager financial resources	yes	yes	yes	yes	yes
Legal background confusing or missing	yes	yes	yes	yes	yes
Loss of enthusiasm	yes	yes	yes	yes	yes

## Outputs

### *Strategic documents*

With the assessment we established a firm ground and starting point, as well as the missing yardstick – from this point on we were able to measure and properly judge our achievements. The next step was to de-

fine the aims, objectives and outcomes to be achieved. Thanks to the external assessment, we had a clear insight into our strengths and weaknesses, which considerably facilitated our definition of goals. On this foundation ten working groups (WG) were formed, to develop a number of documents, regulations, recommendations and catalogues. Each of these groups consisted of a working

group leader (exclusively responsible for final output), other full members were the experts from each of five BH medical schools, assisted by an expert from an EU country. The organizational scheme and participating universities are presented in Table 2.

Each of the working group performed in a satisfactory manner, and as tangible outputs, after three years work and many discussions, we have as results of these joint efforts:

1. New curriculum for medical education, based mainly on Heidelberg University new reformed curriculum, with integrated European Credit Transfer Points (25)
2. Mission statement (26)
3. Proposal of admission criteria, students transfer criteria and rules for students' mobility (27)
4. Graduate profile and expected list of competencies (28)
5. A review article on application of contemporary information technologies in medical teaching and learning was published (29) and a platform for distance learning was established in Aarhus University, Denmark (30)
6. Students assessment & graduation criteria (31)
7. Students transfer criteria (32)

8. Manual for organization of quality assurance (33)

9. Manual for application of new teaching methodologies was published (34)

10. Catalogue of knowledge and clinical skills published (35)

## Faculty training

### *Training in quality management*

Two seminars were held in Heidelberg, one on quality management in higher education with 14 participants and another on new teaching methodologies, with 25 participants from BH, Croatia, Slovenia and Hungary. Quality management training was continued through another Tempus project, granted in 2005 (Quality Management in Medicine, *Qumamed*, CM SCM-C005A05-2005), coordinated by East Sarajevo University, and Katholieke Hogeschool Sint-Lieven, Belgium as contractor (36).

### *Training teaching and assessment skills*

On the basis and results of the Dictum project we proposed as logical continuation, the Integrated Teaching and Learning in Medicine (*Intel-M*), which was granted and started in September 2005 (CD-JEP-19037-

Table 2 Organizational scheme of the Working Groups

Working Group	University in charge	EU support university
WH for new curriculum	Mostar	Heidelberg
WG for mission statement	East Sarajevo	Vienna
WG for admission criteria	East Sarajevo	Gent
WH for students transfer	Sarajevo	Vienna
WG for assessment and graduation	Tuzla	Heidelberg
WG for profile of competencies	Sarajevo	Gent
WG for new teaching and learning methodologies	Mostar	Heidelberg
WG for catalogue of knowledge and clinical skills	Mostar	Aarhus
WG for quality assurance	Mostar	Heidelberg
WG for application of information technologies in teaching	Banja Luka	Aarhus



2004). The project was coordinated by the East Sarajevo University Medical Faculty and the Heidelberg University, Germany has had the responsibility of the project's contractor. During the three years of the project's life-span (it will end in October 2008) activities have been focused on the introduction of new teaching methods with emphasis on the training of clinical skills early in the undergraduate medical education, as well as on new approaches to student assessment.

At the beginning of the *Intel -M* each of the five BH medical faculties selected three to five teachers for one-week intensive training at the Medical Faculty Heidelberg and they become "core groups" which started to implement the new teaching methods. After several follow up training courses most of these highly enthusiastic young teachers were capable of performing to full capacity as trainers of trainees for their colleagues. Two training sessions were held in BH in Jahorina and Neum, granting the dissemination of new knowledge and sustainability of results. An important side effect was the intensive exchange of teachers between all the BH Medical Faculties and an increase in communication at a personal level. Core groups organized the seminars at Medical Faculties outside of BH, at Split University, Croatia and Belgrade University, Serbia. A booklet introducing new teaching and assessment was published by Sarajevo University Medical Faculty (37) and in cooperation with teachers from the Heidelberg Medical Faculty, the Project Consortium is working on an online manual, where the different new methods would be described.

### ***Implementation of ECTS***

This one year project, aimed at introducing the ECTS system to BH medical faculties, was granted in 2006 (CM-SMC-CD10A06-2006) and ended in January 2008. The project was coordinated by the East Sarajevo

University medical faculty. This project facilitates the official implementation of ECTS at all Medical Faculties; moreover an online template for the easy handling of the ECTS at the faculties was installed on a local server in Foča, BH, as an open access source. This was an instrument to serve all faculties as a comparative basis for ECTS implementation. An important side effect of this project was its influence on the quality of the content and formal reorganization of the undergraduate courses, because the teaching objectives had to be significantly improved in relation to student work loads, the newness of the presented knowledge and final outcomes. All these activities influenced the quality of medical education, in spite of the project's short life of only one year.

### ***Students mobility***

Over the past ten years we have been able to organize clinical training for students in Heidelberg, Germany and in Cork, Ireland. Many institutions and organizations have supported these activities: Heidelberg and Cork University; Help the Children Fund and Surgeon Noonan Society from Ireland (<http://www.ucc.ie/students/socs/noonan/about.shtml>), Rotary Club from Speyer, Germany ([www.rotary.de/speyer](http://www.rotary.de/speyer)). On average, each year from 1998 until today, 10-20 students have been placed in hospitals (from two to four weeks), to be trained in surgical and internal medicine clinical skills.

### ***Research and publications***

In the early phases of collaboration of the BH Medical Schools we were both satisfied and proud of our accomplishments and results. Still, our work was invisible to the larger academic community. The dissemination of our results was poor and communication with the international scientific community close to zero. Fortunately, these problems were solved in 2003, when the staff of the

Croatian Medical Journal (CMJ), led by its editors-in-chief, Professors Ana and Matko Marušić, offered professional support and assistance in presentation and publishing our results. Intensive publishing activity started early in 2004, when the CMJ editors invited us to publish an editorial on curriculum reform (23) and invited us to join the International Campaign for Revitalization of Academic Medicine (ICRAM) (38, 39). Encouraged by these early achievements, we decided to start research work on curriculum reform, and the results exceeded all our expectations. We performed internal and external quality assessment in all five Medical Schools in BH, which was one of the first national-level assessments of this kind worldwide (24). In the years to follow, we performed a survey on students' attitudes and knowledge about science (40) and staff's attitudes on the curriculum reform (41). Treatises on medical education and reconstruction of the health sector in Bosnia and Herzegovina were published (42-44), as well as students' research (45-48) and international clinical research (49).

Probably the most demanding task was the creation of the "Catalogue of Knowledge and Clinical Skills" which was another demanding enterprise, and took more than one year. Thirteen medical schools (Vienna, Austria; Gent, Belgium; Aarhus, Denmark; Heidelberg, Germany; Split and Zagreb, Croatia; Chieti, Italy; Ljubljana, Slovenia and 5 schools from BH) from 8 European countries joined in these efforts. There were 16 co-editors and 120 experts, who covered all fields of clinical medicine. The Catalogue was published by "Medicinska naklada" in the CMJ Book Collection (35).

## Conclusion

Since 1997, the five schools of medicine in Bosnia and Herzegovina (Banja Luka, East Sarajevo, Mostar, Sarajevo and Tuzla) part-

nered with academic institutions from EU countries in seven granted Tempus projects. The first project "Virtual Medical Library Development" (3-5) granted in 1997, was followed in 2003 by the "Development of an Integrated Medical Curriculum" (*Dictum*) in 2003. Five more TEMPUS projects were approved and granted, in which medical schools from BH partnered with 17 universities from ten European countries (Vienna, Austria; Gent and Leuven, Belgium; Osijek, Split and Zagreb, Croatia; Aarhus, Denmark; Heidelberg, Germany; Budapest, Hungary; Chieti and Florence, Italy, Cork and Dublin, Ireland; Ljubljana and Maribor, Slovenia and Granada, Spain).

The results were tangible: a network of medical libraries was established; medical schools were assessed internally and externally; a number of important documents were drafted and agreed on; a core faculty group from Bosnia and Herzegovina was trained in new teaching methods; new teaching and learning equipment was purchased and installed and research was done and published. During the last four years over 20 journal articles have been published, some in the leading biomedical journal, such as The British Medical Journal, Brain and The Lancet, e.g. and The Lancet.

Currently we are working on a three-year project "Reform of education in nursing, *Refine*," whose principal objective is to design a new curriculum in nursing at the university level, in three cycles in accordance with the requirements of the Bologna Process standards. Beside the new curriculum, we hope we will be able to produce all other substantial documents needed for comprehensive reform, including the "Catalogue of Nursing Skills" – the work is in progress.

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