

POLITEHNICA UNIVERSITY OF TIMISOARA AND THE BOLOGNA DECLARATION

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Abstract: Politehnica University of Timisoara is one of the oldest technical university in Romania and in the same time one of the most important universities in Romania and in the South-Est European region. The Bologna Declaration is a result of a series of ministerial meetings and agreements between European countries to ensure compatibility in the standards and quality of higher-educational qualifications. In the present paper, the authors analysis the influence, and the effects of the Bologna Declaration over the educational process in the university. The benefits of the Bologna Declaration as well as the drawbacks that arise are pointed out during this paper.

Key Words: Politehnica University Timisoara, Bologna Declaration

1. POLITEHNICA UNIVERSITY OF TIMISOARA AMONG THE ROMANIAN UNIVERSITIES

Politehnica University Timisoara was founded on November 10, 1920 as a result of the Royal decree signed by King Ferdinand. The idea of a technical university in the region of Banat appeared in the early years of the twentieth century, the Austro-Hungarian Empire wishing a strong industrial development of the region of Banat. At the beginning, the Faculty of Mechanics and Mining started with 117 students, studying in Romanian language.

The first name of the institution was "Scoala Politehnica din Timisoara" (Polytechnic School of Timisoara) and during the time this was changed successively to Polytechnic Institute Timisoara, Polytechnic Institute "Traian Vuia", Technical University Timisoara, until the present name: Universitatea Politehnica Timisoara, UPT (Polytechnic University Timisoara).

During time, as a result and following the strong and diversified industrial development of the Banat, new faculties have been formed within the university. Nowadays, the Politehnica University has 10 faculties: Architecture and City Planning, Automation and Computer Science, Chemistry and Environmental Engineering, Civil Engineering, Electronics and Telecommunication Engineering, Electrical and Power Engineering, Management in Production and Transportation, Engineering in Hunedoara, Mechanical Engineering, and Communication Sciences.

Until 1989, when the so-called communist regime fell due to violent civil unrest, UPT was part of a strong centralized structure, containing the all the Romanian technical universities, with the duty and vocation to prepare engineers for the extensively developed Romania industry, as it was during those times. There were only a few technical universities, evenly distributed across the country, in large cities such as Bucuresti, Timisoara, Cluj-Napoca, Iasi, Brasov, Craiova, and Constanta. For each specialization and technical domain, the Ministry of Education, according to the needs (present and predictable future) of the growing industry, established the number of students each year. When graduating, the young engineers obtained besides an engineering diploma, as a sure option a working place, an engineering job that they had to keep unchanged (in theory) for 3 years.

The university technical system was organized for 5 years of study and a final engineering project, but it started with severe entrance examinations. The admission contest was based on written mathematics and physics examination. The number of the candidates was about (average) three times greater than the number of places in the first year, at the technical universities.

Since 1935, the Polytechnic School has obtained the right and responsibility of awarding the title of Ph.D., in the engineering domain.

In the first years after the 1989 violent civil unrest in the Romanian society, happen profound changes, followed by a long period of unstable transition, for changing the basis of the society to a capitalist structure. Those changes affect, in a profound manner, the completely teaching system and especially the technical university domain suffers. The attraction of polytechnic universities is reduced due to the dying Romanian industry as well as due to the attraction (over normal limits) towards management and law studies. Until the year 1995, the interest of young people for engineering studies is decreasing continuously and severely, except the engineering computer science. Many good young Romanian engineers leave the country looking for a job in the Occident and they are real ambassadors of a good technical university school.

The existence of a solid polytechnic school in Timisoara, with a good reputation, made Timisoara one of the main target-cities from Romania for the foreign capital. Slowly, with much precaution, carefully at each step, the foreign capitalism conquers the Eastern Europe, Timisoara being among the first "jewels of the crown". This makes that the technical teaching domain becomes again interesting and competitive (at least a good part of it).

2. BOLOGNA DECLARATION AND ROMANIAN TECHNICAL UNIVERSITIES

A profound changing takes place in the Romanian industry, from a largely developed but closed to imports and widely open to exports – requiring a large number of good engineers, to the new demands of multinational corporations, requiring cheap and medium qualified workers. This had a profound impact on the teaching curricula of the technical universities.

The process of reforming the teaching systems, in order to respond to the new demands (good or bad... this is another discussion) demands imposed by the market, is not at all easy to be performed due to the resistance (sometimes opposition, justified or not?) from inside the conservative system. The technical university system from Timisoara, in fact from all the Balkans, was considered a very good one, solid and confident, perhaps too theoretical, but this due also to the poor access to the high technologies. Engineers who left the country in the early 1990s, were integrated into their new "homes" as competitive engineers. To the new demands of the corporations, it is added also the general globalization, with great impact in the engineering university teaching system.

A heavy shock to the Romanian university teaching system was produced by the appearance ("over the night"), mostly without material and human teaching conditions, but in a huge number, of the private universities. Instead to give higher education, with a better-paid competent staff, with modern and well-equipped laboratories, the private school system, was just an affair: pay money – get diploma. After a while, these private universities (in spite of their lack of exigencies) got also money from the government, including "budget financed students". These universities are, still, an easier alternative to the diploma. Due to political influence, small towns with political support founded state universities, of about the same level as the private universities. Now in Romania are overseen by the Ministry of Education and Research 112 universities in Romania, from which 54 are public and the rest are run by the private sector but such universities need to receive accreditation from the Ministry (somehow they are obtaining it).

Confronted with their decline, in spite of their still good teaching system, in order to complete the number of places given from the Minister (less candidates than places!), for their survival the good state universities had to reduce the exigency, renouncing or simplifying at the limit, the admission contest. At UPT only few (2 -3) faculties require, only one and simple, mathematical examination. The rest of the faculties accept the new students based on high school results (nonequivalent and, sometimes, mistrustful results). In the "good times", the admission exam consisted in two-math examination and one physics (written, 3h each). We still believe that a medium difficulty exam, with two written examinations, in math and physics are mandatorily required for a selection of the candidates capable to become engineers. As it is now, by the admission exam, the candidates are ranked based on an algorithm, they are not selected with the elimination of the inadequate ones.

On the other hand, the succession and alternation of the governments (25 Ministry of Education in 29 years!), with different vision and changing project, lead to incoherence, each "new" denying the "old".

The problem of education is concerning all the EU structures and the world in general. At the level of EU this project is: European Higher Education Area, started as the Bologna Declaration, in full, Joint Declaration of the European Ministers of Education convened in Bologna on 19 June 1999, signed by 29 European countries, Romania being one of them (from 48 participating countries). Serbia has joined in 2003.

The Bologna Process states the minimum knowledge requirements for graduates and their competences, as homogenous as possible for all the countries part in the Bologna Process (BP). Following the Bologna Process, the signing countries should: adopt a system of easily readable and comparable degrees; adopt a system with three main cycles (undergraduate/graduate/doctoral); establish a system of credits (such as European Credit Transfer and Accumulation System (ECTS)); promote mobility by overcoming legal recognition and administrative obstacles; promote European co-operation in quality assurance; promote a European dimension in higher education.

The framework adopted by the ministers at their meeting in Bergen in 2005 defines the qualifications in terms of learning outcomes: statements of what students know and can do on completing their degrees. In describing the cycles, the framework uses the European Credit Transfer and Accumulation System (ECTS):

- First cycle: typically 180-240 ECTS credits (a minimum of 60 credits per academic year), usually awarding a bachelor's degree.
- Second cycle: typically 90-120 ECTS credits (a minimum of 60 credits per academic year), usually awarding a master's degree.
- Third cycle: with no concrete ECTS range, since the discipline vary in length and comprehensiveness.

In most cases, it would take three to four years to earn a bachelor's degree, and another one to two years for a master's degree. Doctoral degrees usually require another two to four years of specialization, primarily individual research under a mentor. Degree names may vary by country. One academic year corresponds to 60 ECTS credits, equivalent to 1500-1800 hours of study.

In Romania was adopted the system with 3 cycles (bachelor, master, PhD) each cycle using the ECTS. The first cycle in technical Universities extends on 4 years with 8 semesters and 240 ECTS. The master cycle is extended on 2 years, 4 semesters and 120 ECTS and the PhD cycle is extended on 3 years.

In this way the owners of technical studies, based on Bologna Process principles, have a shorter duration for studies, orientated on direct use in production process. The engineers graduating our polytechnic education had a larger and more profound qualification, useful and necessary to the requirements of that time society, but, probably, inadequate to the modern working process. Shorter time for preparing a specialist (even with a narrow qualification)

is cheaper for the government and, probably, and with more advantages for the companies which obtain more rapidly the labor force they need. By economic point of view is more efficient (rapid formation), but by point of view of knowledge and education? Time will show the answer.

1. Bachelor (undergraduate) cycle

The first cycle in technical universities extends on 4 years with 8 semesters and 240 ECTS credits. One main advantage of the Bologna Declaration is the compatibility of curricula from different countries and by ECTS credits it is possible a benefic mobility of students. Our university hosts each year more than 100 students, mainly by Erasmus. Erasmus program, based on Bologna Declaration and its ECTS is, surely, a success.

The quality and efficiency of the new curricula depends on the way that the change has been made. Shrinking from five to four years for preparation of a technical specialist implied a severe revision and structural modification of the curricula. Some chapters were eliminated, some chapters were restricted, some study subject were eliminated and most of the fundamental subjects were severely reduced, and this in the context of students with less high school knowledge.

These structural modifications took place in our university when the interest for technical university studies was still reduced. Due to multiple causes the high school has reduced the quality and the exigency of the teaching process, before that this happened in the universities. The survival imposed by "the financing per capita" made that most universities renounced to the real selection of the candidates, taking without value criteria all those who were the owners (sometimes undeserved) of a baccalaureate diploma. Each student (good, less good or inadequate) brings the same amount of money, and becomes a source of financing, source that has to be maintained "functional". In our opinion, from this moment, has started the decline of the didactic process, first with less exigency, later on with a lower quality of the teaching process: what's the use of teaching if they are not able to follow, understand and learn? Eliminating an unable or unwilling student means a loss in financing, a loss for the budget of the university. Loosing many students in the first two years (which would be normal if at least in this moment the university exigency is kept) means that following years (3 and 4) are no more covered financially (not enough "capita").

One of the few motivations that stimulates the young people to choose our technical university is the attraction of the multinational companies (many in our region) that recruit graduated engineers, with good salaries (for Romania). Unfortunately, the companies hire more and more students (mainly the good ones) for part time or, even, full time job. It happens also for the students in the first or the second year of study. They earn some money, they neglect the school, they reduce their future competences, they learn less but due to financing "per capita"... Unfortunately, most of the supermarkets, restaurants and bars hire mainly students and they do not work in a technical environment as the lucky ones who waste their student period with nonqualified work in a multinational company. Even if the UPT has tried convincing the hiring companies to postpone the moment until the master or at least fourths or third year of study, there are no means to convince them. It was not possible to have, at least, an agreement that students should remain hired only if they have good scholar results (as for sport team in American colleges). The companies were deaf to these "non-capitalist" requirements.

In order to make it easier for the "lower value students" (but still "capita"), from the 60 credits corresponding to one year they must accomplish only 40 and they pass in the next year, but they have to pay for the non-accomplished credits from the previous year (source of financing). Some students, in the fourth year, might have besides the 60 credits for the 4th year 60 credits (at the limit) for the previous years. Some of those credits might be (and often they are!) for mathematics, physics and other fundamental courses. Being interested in the improvement of the didactic process, part of the UPT Senate has tried to impose that the passage from the second year to the third (the second stage of the bachelor's cycle) should be made only if the student is "clean", with all the previous 120 credits accomplished. This proposition was severely rejected by vote, most of the faculties being against this proposition.

2. Master (graduated) cycle

The second cycle in technical universities extends on 2 years with 4 semesters and 120 ECTS credits. The second cycle, graduated or master level, is meant to perform a narrow and high specialization, mandatory for those who want to extend their qualification with a PhD study.

According to imposed regulations, a specialization at master level is valid only if a minimum of 25 students are following it. Lately, the interest for the technical master studies has been reducing slowly, year after year. The undergraduate level diploma is quite enough for being hired, as engineer, in good paying companies. The young owners of a diploma, even if among them are some very good and clever graduated, prefer to work for good money instead of learning two more years. There is no difference, at least at payment level, between engineers with master degree and those without it. The curricula of some of the master specializations are not attractive, they are not updated and are responding more to the teachers needs for teaching (wages are/and extra payment). At this level, also it can be observed the lack of implication of the economic, productive, medium. Under these conditions, again in order to fulfil the number of students (with the pecuniary consequences) all kind of compromises are made, with severe reduction of quality and exigency of the teaching process at master level.

3. Doctoral cycle

The doctoral cycle in technical sciences is extended on a, reduced, 3 years duration. During this short period the PhD candidate, guided by the spiritual mentor, must accomplish completely the PhD level teaching level with a finalization by an original work of a chosen subject of study. The written work must be confirmed by publishing some partial results in high value and recognition revues. One of the problems is also the long time delay between

the acceptance and the publication of the scientific paper.

Time duration of only 3 years was considered, at least in the engineering PhD domains, as being too short. The average duration for finalizing a PhD research, at the same doctoral schools, before the implementation of the Bologna was 6 to 10 years. Exigency and quality were assured by the few, but top level, teachers having the ability to conduct PhD studies. In order to satisfy a certain clientele (political and new rich leaders of the society) the PhD become less and less valuable and became even immoral and result of plagiarism. The interest of good graduated engineers for continuation of their increase of qualification by PhD level studies is reduced, because this new degree of qualification is, significantly, important only for a didactic career; a didactic career not as well paid as working in competitive companies, a career with a minimal (or not at all) social recognition and respect, and, due also to the decline of the teaching level, a career with less and less spiritual and moral satisfactions. Even if, in theory, the companies are sustaining the PhD level studies (sometimes with small sponsor presence, for their „good” public image), in fact this domain is ignored and suffers from a continuous depreciation of its real value.

3. THE IMPACT OF THE BOLOGNA PREOCESS ON THE TEACHING AT POLITEHNICA UNIVERSITY TIMISOARA

As in all countries members of the Bologna Process signer group, also in our country there are, in the academic community, opinions for and opinions against the changing produced by the implementation of the Bologna Declaration. It is difficult to extract the modifications in the teaching process, which are due only to the Bologna Process, in the context of the profound modifications due to unpredictable and uncontrollable causes corresponding to the 30 years of chaotic and unfinished transition of the teaching system. The Bologna Declaration and the evolution of the Bologna process happen in a period when the worldwide university learning is in crisis. Unfortunately, the young people find less motivation in education and learning, they are not attracted to continue their studies at university level and, therefore, the whole university system is suffering a noticeable regress. Due to this evolution, most of the opinions about the Bologna process, mainly in Eastern Europe universities, are against and not for the evolution that the Bologna Process might produce. The Romanian technic teaching system, in the communist Romania, was conceived, organized and controlled in order to produce specialists for a closed economy, with a general and fundamental strong knowledge, so that the engineers had to be able to respond to all the technical challenges of an autarchic economy.

Once the irreversible general globalization started, and the Bologna Process act in this direction, appears that an engineer with a large specialization is no more demanded by the modern society. Some universities are able to perform high-level research, working with the big companies, leader in their domain of activity, and many other universities give a medium quality education, graduates having not a very high competence, being in fact engineers suitable only for production activity. This is part of the context that high level research has to be made only in the top level high developed countries and the lower technical activity to be performed in other countries, most of them from the Eastern Europe, countries which are the consumer part of the EU. The young engineers, high level graduated and even undergraduate young people, choose to finish their studies in top-level occidental universities.

The decrease of the number of good teachers in our university (and in most of the Romanian ones) is due also to the fact that the promotion to higher didactic degrees is made based on numeric criteria, where point obtained by, sometimes, unfair ways, and not on didactic value or didactic vocation. Maybe the payment in the technical universities should be split into didactic and research. The promotion on didactic degrees should be, probably, separated from the research activity, because as it is now the didactic value and recognition (essential for attracting good students) is neglected.

4. CONCLUSIONS

In this paper, the authors made a briefly presentation of the Politehnica University Timisoara, one of the oldest technical universities in Romania. The evolution of the university is made in parallel with the Bologna Declaration. The authors analyses the influences of the Bologna Declaration on the teaching process in the Politehnica University and in general on the technical universities in Romania. There are pointed out some advantages and some drawbacks of the Bologna Declaration. There is presented the actual state of the technical university teaching process. The intention of authors was not to give, or propose, some complete or general solutions considering that as a duty of the ministry and the competent leading organizations. We just wanted to give a “screening investigation” as sincere and correct as possible in order to show what we think there are the “diseases” of the teaching technical system, so that “the doctors” to find the correct treatment for improving the education, the most important component for creating a good, or at least better, future to the mankind.

5. REFERENCES

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