

THE RAILWAY COLLEGE AND THE REFORM OF HIGH EDUCATION IN SERBIA AND MONTENEGRO

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ABSTRACT

The paper contains the experience gained by the Railway College within the reform of high education in Serbia and Montenegro, which is being carried out with the purpose of coordinating the educational systems in Europe. The introductory part reviews the educational system up to now, and the following parts of the paper discuss the reform of the Serbian Railways and the Railway College as well as the results achieved with the first group of students who enrolled in the Railway College according to the new curriculum, and the comparison with the results that the students achieved within the previous system.

Key words: education, railways, Bologna Declaration, Prague Communiqué, Berlin Communiqué, higher education

EDUCATIONAL SYSTEM OF SERBIA & MONTENEGRO

School Education

Primary education lasts for eight years with age level from 7 to 15. Secondary education is provided in grammar schools, vocational schools and art schools. The curricula in Serbia and Montenegro are adopted by the Ministers of Education with the prior consent of the Education Councils of both Republics.

Grammar schools offer general education in social studies and science. They also prepare for further education, post-secondary schools or faculties. By completing grammar school students acquire four-form secondary education. The certificate awarded at the end is the Secondary Education Diploma (*Diploma o završenoj srednjoj školi*). Secondary vocational schools offer both general and vocational (practical and theoretical) education for direct entry in the world of work and further education.

The vocational qualification is acquired at the level of third and fourth forms.

Higher Education

Higher education in Serbia includes university higher education (faculties and art academies) and non-university education (post-secondary schools).

Universities in Serbia organize art and educational work, as well as other activities, in compliance with the law and its statutes.

The faculty is an educational or art institution which, in its basic activities, includes basic studies, specialized studies, magisterial studies and doctoral studies.

Universities and faculties offer programmes that last between three and six years and lead to the High Education Diploma (*Diploma visokog obrazovanja*). Students who are awarded this degree are also awarded a professional title in various scientific and artistic fields (e.g. graduated mechanical engineer, graduated economist, medical doctor).

University level of the second stage, with the Master's Degree programme lasts for at least two years. Upon successful completion of the course work and the defence of a thesis, candidates are awarded the academic degree: *Magistar...nauka* (Master of Science).

University level of the third stage means obtaining the highest academic degree: *Doktor...nauka* (Doctor of Science). The Doctorate of Science is obtained through independent research and does not require structured course work of any kind. Candidates are evaluated among the Masters of Science on the basis of published research papers and their ability to write and defend a doctoral dissertation.

Post-secondary higher schools (*Više škole*) in Serbia and Montenegro offer programmes in technical subjects, paramedical sciences and other vocations. They run from two to three academic years and lead to the Higher Education Diploma (*Diploma višeg obrazovanja*) with a professional title (mechanical engineer, transport engineer, economist, etc.).

THE REFORM OF THE SERBIAN RAILWAYS

The Serbian Railways enterprise is still at the beginning of its reform. The only visible move, up to now, has been done in the field of reducing the number of employees and liberation of daughter firms. The enterprise can't carry out the reform alone and is expecting help from the government. Unstable situation and lack of money are facts that make the situation worse, but everyone is sure that the reforms have to be realised in the near future.

The Railway College analyses all movements in the field of the reforms of the Serbian Railways, as well as the reforms of the neighbouring countries, trying to predict the profile of the employees which will be needed in next years.

THE REFORM OF THE RAILWAY COLLEGE

Basics

As the Railway College is specific and closely connected with the railway system of Serbia and Montenegro, a great influence on the College's policy can be expected from it. Another big influence is the influence of the Ministry of Education and Sport of the Republic of Serbia. And last but not least is the influence of

potential students that are expecting employment.

Following the current tendencies of reorganization of high education in Europe, in accordance with the Bologna Declaration, the Ministry of Education and Sport of the Republic of Serbia has begun drawing up a new law of high education. Owing to the changes in the government of Serbia, and the influence of the Belgrade University, more than three concepts have been analyzed. The final version of the law is to be expected till the end of the year 2004.

The Railway College started its own reorganization in the year 2001, at the same time when the work on the first law version started, but independently. The main idea was to offer better studying conditions and knowledge to the students and give them opportunities to get jobs faster. Another criterion was the organization of studying process with the best efficiency and minimizing costs.

During the reform, the Bologna Declaration and the Prague Communiqué were issued too.

Realization

As most majors have very similar needs for general and general vocational knowledge, a common first study year concept has been adopted. In the first year of studies, depending on the major in which they want to continue their studying, the students choose among the offered modules that they want to study and take examinations in. However, the students are also entitled to attend, without any additional costs, other classes which are not compulsory for the desired major. This does not give them any special advantages at the moment of enrolling for the desired major, but is included in the Diploma Supplement. In reality, the students are practically directed from the very first day of teaching but, formally, they are directed in the second year of their studies.

The advantage of final selection of a major in the second year of studies is that the student, after the end of the first year, is able to assess his or her possibilities more realistically, as well as to choose a major which is more suitable for him or her at that moment. An evolution from the originally desired major to another major has been noticed with a proportionally large number of students. Likewise, it has been noticed that some students, unable to fulfill the conditions of enrolling for a desired major in the second year of studies, choose another major the conditions of which they can satisfy. In that way, the student

can speed up the completion of his or her studies, but it is too early to draw a conclusion about the correctness of such a move.

The teaching is planned in a very practical way. A modular system of subjects is applied. The subjects consist of modules, and each module represents a whole lasting a semester. The subject matter within a module is not repeated in other modules or, at least, not at the same vocational level. Taking into consideration the existence of different majors, the maximum number of possible modules is usually formed within a subject, which can apply to a few majors, and the specific studying of individual fields and topics is done in the following modules.

The advantage of this method is reflected, first of all, in the possibility of giving lectures to bigger groups, i.e. for a few majors at the same time. According to the norm, the size of a group for lectures in the first year of studies, recognized by the Ministry of Education and Sport, should be 85. If lectures were given to each of the seven majors respectively, a minimum of 600 students should enroll in the first year in order that the teaching should be economical, which exceeds the needs of the Railways and the capabilities of the School.

The modules have been united in school subjects so as to satisfy the regulations of the Higher School Law of the Republic of Serbia, which says that a teacher can give lectures and be appointed for two subjects at the most.

Each module has been given a certain number of ECTS points, but it has been decided that this should not be applied and published yet, because a conviction has prevailed that the evaluation of modules should be coordinated with the other colleges in Serbia.

The students graduate after they have written and defended a diploma paper.

This concept has been approved by the Ministry of Education and Sport of the Republic of Serbia and, at the moment, two generations of students have been studying in accordance with the concept.

First Experience

It is still too early to draw all-inclusive conclusions, but the first experience connected with the reform has already shown a series of advantages:

- A greater number of students has enrolled in the next year of studies;

- The curricula have been improved and modernized and better adapted to the real needs of the Railways;
- The repetition of the same subject matter in different subjects has been avoided, etc.

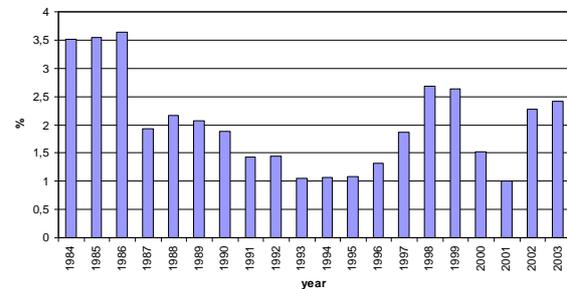


Figure 1 The number of students enrolled in the first year of studies for the first time

Yet, the first and the most evident change has been a sudden increase of the number of students enrolled in the first year of studies for the first time. The graphical survey is given in Figure 1, the year 2001 being the referential year, which preceded the reform.

The students that enrolled in the College were those who paid the fees by themselves and those whose fees were paid from the Budget of the Republic of Serbia. The structure of enrolled students is given in Figure 2.

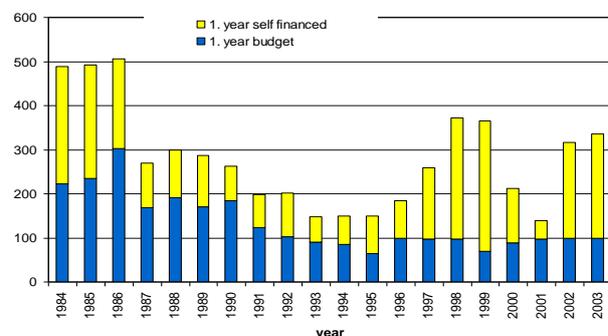


Figure 2 The structure of students enrolled in the first year of studies for the first time [1]

A sudden decrease of the number of students enrolled in the first year in 2000 was a consequence of revoking two majors that had existed up to then and it was to be expected, but the decrease in 2001 was a warning that urgent changes were necessary. In the reform's first year the rise reached 120%, and the following year the allowed quota of students enrolled.

Although there was a big decline in the number of students enrolled in the first year of studies in 2001, the change in the total number of

students was considerably milder, which can be seen in Figure 3.

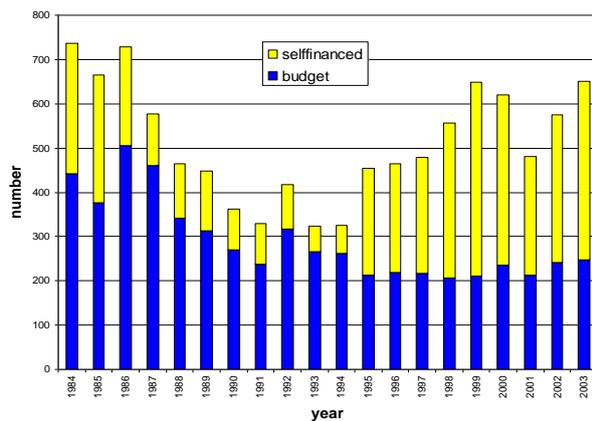


Figure 3 The structure of students enrolled in all years of studies [1]

The difference in the number of students of the Railway College in the previous figures is a consequence of various influences, from the changed needs of the Railways and the changes in the Higher Education Law to the different degrees of interest in the studies shown by graduated secondary school pupils. Yet, with a relative certainty we can say that the reform has led to the growth of the School. The potentials have not been exploited yet because the students' interest in all the majors is not equal. By strengthening the Railways and the economy in Serbia, together with good quality studies at the College, a further increase in the number of students as well as the development of the School can be expected.

However, the analysis of reform results has also pointed out some disadvantages, so we shall pay a greater attention to them in the next part of the paper.

Technical and Financial Problems of the Reform Implementation

What the changes in studying have brought, and what is inconvenient for the organization of teaching, is an undefined number of students in groups till the end of the October examination period in the first year of studies. Namely, towards the end of the summer semester of the first year, the students apply for one of the majors of the second year of studies, in accordance with the open competition announced by the Principal. As at that moment, the number of students who are entitled to enroll in the second year of studies is still unknown, the number of students in respective groups is only approximate. The exact number of students in groups can only be defined at the end of the last examination period in the

school year. Thus, the number of students for some majors can easily be below the minimum that could justify the teaching economically. The School undoubtedly has a big dilemma: to organize the lectures with obvious losses, or not to allow the students to continue their studies within the desired major. The decision is hard and, in practice, before it makes the final decision, the School consults its students' future employer. Thus, in the school year 2003/04, a group for security signal devices was formed for only five students. In return, the Belgrade Railways enterprise helped the School with its material and human resources in order to organize exercises for the students. This aspect of cooperation could be a model for a further cooperation in mutual interest.

An alternative solution could be to send the students who insist on a certain major to another technical college or faculty to attend the lectures and pass the examinations which the School cannot organize, and to take the examinations in other subjects in the Railway College. Many schools have accepted this idea, suggested by the Railway College, and the School has signed agreements on business-technical cooperation with some of them. The idea is completely in accordance with the aspirations stated in the Bologna Declaration and could help the rationalization of high education in Serbia, particularly in Belgrade where nine colleges exist.

As one of possible solutions, the teachers from other educational institutions can be engaged to give a certain number of lectures.

The second negative influence on the School's implementation of the new system is the need to organize work in small groups. In that way, the students are provided with ideal conditions and a close contact with teachers, but the number of lectures and exercises has been increased drastically. The most obvious example is the organization of teaching process for the subjects that require the use of computers. Thus, during the first year of studies, the teaching for the Operative Systems and Business Software Module is organized in 30 groups with two classes each, which requires four full-time teachers for practical exercises. A similar situation is for the PASCAL Programming Language Module and the Databases Module. The School has enough classrooms, but it is exposed to big financial difficulties, because the Ministry of Education and Sport does not recognize the costs caused by the work in small groups. A standardized group for exercises in the

first year of studies has 35 students. The costs can be lessened by including such subjects in the second, or even the third year of studies, when the number of students is virtually decreased; however, a criterion prevails in the Railway College that says that the students should be given computer science knowledge in the early phases of studying so as to use it during their studies.

The third influence caused by the reform of studies in 2002, which is a direct consequence of work in small groups within many majors, is an increased need for a number of classrooms necessary for the teaching process. Before the beginning of the reform, the School had, besides an amphitheatre, a number of spacious classrooms that could accommodate up to 80 students. According to the new system, there were few subjects that required large classrooms for their groups of students. The amphitheatre was enough for the common subjects of the first year, and the large classrooms were adequate for the other subjects. On the other hand, due to a large number of students and examinations, the School decided that most of the examinations should be taken in a written form, so partitioning all the classrooms would not be suitable in that respect. A compromise solution has been found so far – some large classrooms are to be turned into smaller classrooms and computer rooms. The fate of the other classrooms will be decided depending on the future teaching needs.

The fourth important influence of the reform is the need to provide textbooks for the teaching process within seven majors and thirteen groups. It is the School's tradition that each subject should have its textbook or mimeographed professor's notes. The tradition has continued, but due to a small circulation and big printing and publishing costs, with the low prices of textbooks, every published textbook is a loss for the School now. Yet, thanks to a strategic interest, the School continues to publish textbooks.

The analysis of students' results after the end of the first year has shown that a large proportion of students managed to enroll in the second year of studies, although they had taken an exceptionally big number of examinations due to a lot of one-term modules. According to the existing Higher School Law, the student can enroll in the next year of studies even if he has not passed two examinations in the previous year, which would be a catastrophe for the students that study according to the new system if the modules did not belong to the subject that

includes a few modules. By grouping the modules in subjects, the enrollment in the second year has been made easier, but the problem of fulfilling the conditions of enrollment is passed on to the third year. By the introduction of credit system and the new High Education Law, this problem will disappear.

The analysis of students' work in the school year 2003/04 has shown that the students of the second year are overburdened. Besides the exceptional tasks of the regular teaching process and examinations, the students are also overburdened with the examinations that they did not pass during the first year. The purpose of the reform in 2002 was to give the students all the knowledge necessary for their quick fitting into the working process with the Railways but, now, it is obvious that it was a little too ambitious and that the students cannot keep pace. On the average, the students have about 30 lectures and exercises a week, which is enormous. The above discussion leads to a conviction that the existing curricula should be revised in order to achieve a high degree of specialization and to provide an acceptable number of 24-26 lectures and exercises a week. Thus, the students would get more time for individual work and studying in the true sense of the word.

And last but not least is the analysis of necessary financial prerequisites for the Railway College to enter the sphere of high education and to join the Bologna process actively. An exchange of teachers and students and stronger links with similar educational institutions will, undoubtedly, require substantial financial means. The question is how feasible it will be at all, taking into consideration the development level of Serbian economy and means of payment of the population.

CHALLENGES FACING THE SCHOOL AND PLANS FOR ITS FUTURE DEVELOPMENT

Risks

The Railway College works in an environment influenced by tumultuous changes and restructuring, with no clear vision of a future progress, economical development and employing experts. If it is a well-known fact that the School should follow and even have a leading role in the social development, then it is clear the School has been assigned a very difficult task to foresee the future needs of the society. The School has to be at least five years ahead of its

time so as to be able to provide right cadres at the right moment, i.e. to enable its graduated students to get employment. The students who entrusted their education to the School, are entitled to ask for knowledge and qualifications that will enable them to be superior when applying for jobs, first of all with the Railways, as well as with other economic enterprises. That is why the responsibility of the School management board is exceptional.

The current trends in education lead to shortening the studies at faculties, and today's higher schools will soon compete with faculties in the same segment of education. This can cause vying for students and general decline in the quality of teaching and the quality of graduated students. On the other hand, the application of concept of permanent learning offers real assumptions for the expansion of the School because, due to constant innovations in teaching and taking into consideration social needs, it will get into a situation to exploit its capacities completely.

In near future, new private schools with similar subjects and the names of well-known and unknown foreign institutions for higher education will certainly be founded. Those schools will issue certificates and diplomas with pompous announcements that the diplomas are recognized in Europe and all over the world, so they will lure students with them. So far, the education for railway transport needs has been a segment that has not been too interesting for such schools but, due to the saturation of markets in other fields of education, an interest in education in this sphere will certainly be increased.

One of the greatest risks is definitely the unstable and uncertain financing of the School's activities. Today, the state is unable to finance the School's activities completely, and the self-financed students cannot pay the real fees. The work in the later years of studies is hardly profitable, and part of necessary means can be provided from the fees paid by the first year students.

And last but not least is the influence of the new High Education Law. The sooner the Law is passed, the more favorable working conditions in the School will be.

CONCLUSION AND TASKS

Based on the above observations, the rule that every change necessarily causes bigger costs, and sometimes improvement, is confirmed. The School can expect a real improvement for itself

and its students only when the new High Education Law is passed when, besides good-quality knowledge, the students will receive diplomas of a higher rank and objectively better chances for employment. The passing of that law will cause at least one more reform in the School.

In the next period the School has to pay special attention to the following:

- A constant increase in the quality of teaching and classroom equipment;
- Preparations for credentials;
- Transition to the credit system (ECTS);
- Preparations for the transition to high education;
- Constant adaptation of offers to the needs of the Railways and the society as a whole;
- Broad cooperation with other high education institutions, both in the country and abroad;
- Development of distance learning;
- Cooperation with economic structures in all fields, particularly in the field of occupational health.

And last but not least is that the School should provide a source of stable financing.

A successful accomplishment of the above mentioned tasks will guarantee the School prosperity based on work and the results of work, as well as good-quality jobs for students even in the conditions of fierce competition.

REFERENCES:

[1] Čekerevac Z, 47 godina obrazovanja na Višoj železničkoj školi, Vol. 1, 1st International Symposium High Education for Transport Needs, Mokra Gora, 2004-06-15

[2] Čekerevac Z, Reforma Više železničke škole 2002. godine i Bolonjski proces, Vol. 1, 1st International Symposium High Education for Transport Needs, Mokra Gora, 2004-06-15

[3] Structure of Education System in Yugoslavia, www.ceebd.co.uk, source: Ministry of Education, Belgrade, 2001