

THE NEW DIMENSIONS OF HIGHER EDUCATION IN MINERAL RESOURCES AREA

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Abstract: During the history, the engineering profession was practiced by people selected from the elite of young scholars, the qualification obtained during long years of high level education. Nowadays, thousands of engineers, sociologists, teachers and others are devoted to find out the good practice to educate the new kind of engineers, able to face the new problems emerging in the society.

Key words: education, management, mineral resources, university.

Introduction

During the history, the engineering profession was practiced by people selected from the elite of young scholars, the qualification obtained during long years of high level education. Starting with the 18th century, the first academic level schools of engineering appear, in Freiberg (1835) and Chemnitz (1837). A new kind of University is born, being characterized not to educate people to be *extra vitam*, but to manage the quotidian life oriented towards satisfaction of human and social needs.

Many centuries, the engineers, proud of their elitism, educated to be devoted to the deductive reasoning, reductionist and claustrated in the frame of "subjects".

Nowadays, thousand of engineers, sociologists, teachers and others, are devoted to find out the good practice to educate the new kind of engineers, able to face the new problems emerging in the society.

Strategic outlook of the university

The mission characterizes the outlook of what a university intend to do and become, on a long term. Through mission are declared the specific of activities, which it will enterprise and the way which management will take in the future.

A correct mission formulated has to answer to the following questions:

- who is that university?
- what is it doing?
- where is it going to?

The mission formulating has as purpose the personalization, particularization of university. It reflects through what it will be differentiate by other university, which will have their own identities, the character and the way that it will traverse in its development. Without the clear precisation about what it wish on what it

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doesn't wish, about the direction that next activity will have, a university can't become a leader in its activity domain. The mission can be established both for the whole university and for any component in part.

The definition of university mission, as well as each faculty, partly has to permit the understanding and definition of educational activities domain and types in which is implicated a university. Because a university develops both teaching activity and scientific research or a lot of specialized services, the mission's orientation to organized quality makes necessary taken in consideration all the factors that influence the quality level of those process/services. Through mission of university must be precise the moment when it will give the strategic direction another way. In the same time, the mission has to communicate in a clear, interesting and concise content.

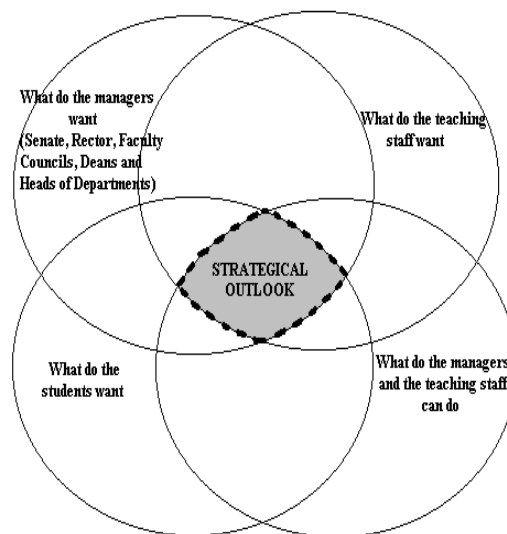


Figure 1. Strategic position of a university

The outline of mission, in a detail way, realises through strategic direction of university in each of fundamental domain: teaching activity, scientific research, other specific services. For example: the concept of teaching activity may be conceived as a compromise resultant between the following elements: what do managers want; what do the students want; what do the teaching staff want; what the managers and teaching staff can do.

The strategic direction must be in concordance with what the managers want to do. If what make do a university doesn't correspond with managers aspiration, there are all chances that their interests and their implication in managerial process to be reduced, process organization to be inadequate and the results are minimal. In these circumstances, both number and teaching and administrative staff loyalty will be continued diminished, will increase their unthankful and some of them, probably the most capable, will leave the university or they will carry on adjacent activities,

decreasing the quality of their works. The most efficient students will orientate to another universities, the only attraction element of new students being an easy obtaining of a university diploma (Georgescu et al., 2007).

What do the students want. If the wishes and aspirations of candidates at the admission test or of students are not satisfied, they aren't candidate at the admission test or they will leave the faculty. Once with the candidates or students loss, the university will be in impossibility to continue its activity.

The students wishes are very complex and different, sometimes even contadictory, and that's why a university wich is concern on quality, must give a special importance studying of differents groups of students reasonings, and must orientate about "target groups". Through students reasonings should be teaching process quality and corespondance of their activities with the most performances standards of european universities, but also the easiness of admission acces, the facility of exams promotion and obtaining a universitary diploma or the posibility of benefit some social facilities (scholarship, hostel).

In some situations, both the managers and the teaching staff wish to maintain or even extend of one particular kind of teaching activity, forget to take in consideration the mutations that take places in request's structure. In industrial units, such a conception means "stock production". If there is still a chance that over a year, or two or ten years, somebody buy however that product, in higher education such a thought has immediate effects. "The overproduction" of university diplomas can lead quickly to degradation of the university imagine and to request decrease even under normal limits. These structural disfunctions are the heaviest to overtake, especially in state university, in case in which doesn't exist a fast feedback in what depend of activity cycle potential, and the decision organism at a national level are proved not capable to use a set of lever that are very used in European system. Due this fact, according to World Education Report (1993), elaborated by UNESCO, Romanian higher education structures continue to carry, in a pregnant way, the mark of organization conception of soviet education.

What do the teaching staff want. If university direction is contrary to teaching staff values and aspirations, the managers decisions will meet the staff resistance and they will lose from efficacitate, the teachers trying to realise only not to get in trouble. The number of control atribution person and of those from administrate activities will have to increase and the operators efficacitate will decrease fast. Students will notice the interests absence of teaching staff and the activity quality degradation, the best of them make their choice for another university.

What can do the managers and the teaching staff. The most frecvently, the romanian universities are confrunted with the same situation. In their desire to maintain or increase the number of teaching staff are orientated to development some specialities and types, for wich the request is excedentary, but their universitary preparation, and especially mentality and experiences from former periods are limitedated in a delicate way the efficience of activities. In a current way, The objectives, dimensioned depending on request, are overtaken the human

potential necessary the quality of teaching staff is decrease in continue way even if organization objectives are directionated to excellence and quality. With a such of situation are confrunted both universities and faculties at wich the number of students increase by far over the level wich can assume both the quality standards and those, wich in standards absence, invent new specializations with “commercial names”.

The strategic outlook of a competitive university must be position in the place in which there are intersected all of four types of factors which determined the essence, the content and proportion of higher educational activities. The strategic orientation of university has two essential components: outside outlook and intern outlook.

The outside outlook resulting from reporting at students necessities and requests, consist in the establishment the target students group, position in educational system, detail definition of educational services concept, operational strategy, integration ways of strategical system, offering system of educational services.

The internal outlook, resulting from reporting of teaching and administration staff necessities and requests, consist in: establishment the personal segment; position of human resources management; detail definition of educational services concept; the specification of strategic orientation about difference between financial and unfinancial rewards values got by teaching staff; the integration ways of strategic system in human resources management; operational strategies on its own personal.

On the new mineral resources engineering dimensions

Among the questions debated are: generalist or specialists, technocratic or humanist, educated in universities or in engineering schools, etc.

Another question is the relation of the engineer with the other scientific fields, with the social life, with the environment.

The main task of the engineer is to solve technical problems, for the use of the society. It must listen to the needs of this society. The Technocratic engineer -who uses its knowledge as a power lever is often arrogant. It is necessary to educate the engineer to practice a deductive reasoning, to apply a multidisciplinary approach, to take decisions in the conditions of uncertainty, to use imagination, to accept fuzzy thinking, the systemic approach to replace the algorithmic thinking. The arrogance must be replaced with simplicity and intellectual honesty, the good basis for the exercise of responsibility (Romanovsky, 2008).

The new challenge for the engineers is to manage the complexity- the technical, technologic-social -human problems. This implies the training of a generalist engineer, training based on a solid scientific study, in contact with the fundamental research, in which the doubt is accepted as the active principle of the progress, to find the balance between the sclerosant certitudes and paralysant uncertainty.

The new skills required for the new engineer is the art to listen, to propose, to persuade, the science to take care the other's opinion.

Part and parcel of social protection, labour and environmental protection are today studied both by technical sciences and by humanities, which are interested in finding the most adequate methods and ways of optimising human integration in the system of professional demands, of planning, and ensuring the functioning of jobs.

Work security and health cannot be separated from production problems. Due to this fact, in the near future, managers will have to assimilate the new philosophy of security, according to which the protection of labour, of environment, and the quality of products should be a common objective, having the same statute as the objectives regarding profit achievement.

Transition from centralised, state owned economy to the market economy is a new and extremely complex process that requires multiple changes of moral, social, economic and political type. The determining factor in making it operational is the content and quality of management, at a macro-economic level as well as at company level.

Europe face to face with modern education

The globalization enhances the diversity of the world. The connections between technique, technology, social, economic, spiritual, human, are more and more embedded enhancing the complexity of the systems which are managed by the engineer. The bound from savant ignorance towards participative knowledge is necessary, in the contemporary world which is complex, divers, multicultural, polymorphic, making the univoque, reductive and intolerant attitudes useless.

The trend to globalization, which affects whole the planet, faces the education systems with problems causing dramatic crises. Recently, a European Space of Higher Education was considered, as a network of national educational systems.

The space of Europe constituted during centuries the thesaurus and generating focusing point of major cultural, scientific and technological achievements. In past years, a certain decline was observed in these fields. The Higher education, mainly in the field of engineering, became less attractive. In order to limiting this process, the trends and causes must be detected. This is a task not only for UE member states, but also for the candidates, in order to have the time to reach the target.

The first trend is regarding the change of the role of the university related to the society. The trend towards the entrepreneurial university is generally manifested. Facing the risk that the university became a service provider and the student a client, the basic principles of the academic spirit- partnership between students and teachers-must be reinforced. Bound from savant ignorance towards participative knowledge is necessary, in the contemporary world which is complex, divers, multicultural, polymorphic, making the univoque, reductive and intolerant attitudes useless.

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The existence in different countries of different educational systems and structures imposes the compatibilization of legal framework, curricula, without affecting the innovation and autonomy, insuring in the same time the premises of the competency mobility demanded by the globalization.

In this field, the compatibilization and harmonization of the study duration and the levels of expertise on two basic cycles is a common trend. The existence of two stages -undergraduate and graduate- insures the opened character of the education, and a more efficient management of candidates, which can choose ab initio their career path.

Adopting a system of accumulation and transfer of credits, by the improvement of ECTS, can ensure the increase of flexibility and a greater mobility of graduates in a globalized labour market.

The mobility of human resources, by its positive effects is a generous goal, which can lead to the development and consolidation of national educational systems, but the differences between countries can make the flow of competences, as it happened with material resources flows, unidirectional.

The accreditation and quality management represent another component of the compatibilization. The accreditation is based on the assessment of conformity to standards, and the quality is measured by the level of fulfilment of the demands imposed by the standards. Other individual criteria must be added, such as the rate of success, the rate of absorption of graduates by the labour market, results in research, and the efficiency of the academic management.

The development of the continuing education and the adult education - elements of lifelong learning - represents another priority in all debates on the higher education. The social dynamics, the rapid changes in the structure of labour market, imposes practices to recall, many time in their career path, the graduates inside the university.

Promoting and developing the elements of attractiveness of the European Space of Education is another task of the contemporary university. The main element of attractiveness of the European university, which represents in the same time the resource of its competitiveness, is the high level of training and research, based on the many century tradition. We must notice that all the traditional university

systems the classic one, the Humboldtian and Napoleonic types were born in Europe.

The above mentioned assertions about the profession of engineer and the institutions hired to train them, are only a bit of the complex problems which need solutions. They are actual for any country and any field of engineering, including, with some specificity the mineral resources (mining, oil, gas, metallurgy) engineering.

The Romanian higher education on mineral resources

The Romanian higher education of extracting mineral resources had both the mission of forming a well-trained staff for all the domains specific to extractive industry, and that of training a large number of engineers offering them the opportunity of attending post-university lectures at getting doctor's and master's degrees.

The changes in the economic and social life of Romania, in the last 10 years, determined higher education system to analyze both the performances, the potentialities and the shortcomings up to that time, and the future perspectives and dangers.

This analysis correlated to European directions determined the elaboration of a new strategy in the domain of training higher education staff and of scientific research.

As a consequence, it was necessary to modify the abilities and the contents of specializations, by integrating certain specializations within a larger field and by initiating new specializations (Ilias et al., 2007).

Concerning the young people's training in the mining, oil and gas area, the higher education strategy regarding extractive industry developed according to two directions: the growth of managerial training in the above-mentioned fields and for all specializations required by labor market and the creation of new specializations, as environment in industry (and especially, in extractive and adjacent industries) and the management of labor security and health (Tovazhnyansky, 2000).

In order to achieve a good university management, capable of training specialists in the above mentioned areas, able to become, at their turn, good managers, as well as specialists in extractive technologies, in exploiting and building the extraction machines and equipment, universities have established proper strategies, as follows:

- the drawing up of educational plans, capable to respond to all these demands;
- the elaboration of analytic programmes, adequate to schooling disciplines and in concordance to practical needs, improving continuously and adjusting to the new;
- the setting up of a professorate having high proficiency, able to teach the students the newest knowledge in the domain and to effectively participate in the drawing up of speciality studies;
- the drawing up of teaching aids capable of determining a modern teaching process, with up-to-date methods and methodology;

- the post-university improvement of a large number of engineers who are new employed at the labour and environmental protection offices.

Conclusions

The Mineral resources engineering, is more than technology, more than technics, more than science. Its object is the man fight with the nature. Its results affect man, society, collectivity, environment, resources based economy a.s.o.

The curricular reform, operated in many universities, including the Romanian Universities, being aware of these considerations, enhanced, among the basic scientific, the professional and specialty subjects, the amount and content of social human sciences, psychological-pedagogical, management and economical and general information subjects.

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NOWE WYMIARY SZKOLNICTWA WYŻSZEGO W OBSZARZE SUROWCÓW MINERALNYCH

Streszczenie: Przez lata historii, zawód inżynieria był praktykowany przez ludzi wybranych z elity młodych naukowców, kwalifikacje uzyskiwano podczas długich lat edukacji na wysokim poziomie. Obecnie tysiące inżynierów, socjologów, nauczycieli i innych osób, poświęca się, aby dowiedzieć się na temat dobrych praktyk, ażeby kształcić nowy rodzaj inżynierów, być w stanie sprostać nowym problemom pojawiającym się w społeczeństwie.

Słowa kluczowe: edukacja, zarządzanie, zasoby mineralne, szkolnictwo wyższe.

矿产资源地区高等教育的新维度

摘要: 在历史上, 期间工程界由选自精英的年轻学者, 在多年来的高水平的教育中获得的资格的人练习。如今, 一千的工程师、社会学家、教师和其他人是专门用来找出好的做法, 教育新的工程师, 能够面对社会中出现的新问题

关键字: 教育、大学、管理、矿产资源。