

Letter to Editor**THE LIMITS OF PRAGMATISM IN EDUCATION AND TRAINING AS A FACTOR INFLUENCING THE QUALITY OF LIFE**

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Characteristics of the development of education system of the Slovak Republic

„ The Enlightenment demands nothing but freedom-freedom that lies in the public use of reason and, that is, under any circumstances. Because of to think independently is the calling of every single person.”

Immanuel Kant (1783)

The fact that our educational system doesn't fulfil its basic functions to a societally accepted level is a reality that is generally accepted.

If we will build on that fact then the creation of effective model of its last, i.e. university's degree should be based on:

1. Analysis and evaluating of the entire system of education and training.
2. Determination of the key factors determining the "knowledge potential" provided to graduates on secondary education level and to determine their impact on the level of university education.

Here one can also state that the BERG faculty because of objective but also subjective reasons is currently in a situation in which if it has ambitions to fulfil its social functions at the required level, will have to solve two basic areas of problems.

1. The first concerns all study areas that presently make up the professional profile and consists in the need to maintain their academic character.
2. The second is given by the fact that the faculty as the only one of its kind will have to orientate its research profile onto a system solution of the problem of the creation of complexly conceived basis with raw materials and energetics in the relation to the long-term designed economic policy of the state.

Ad.1. When it comes to the problem of maintaining its educational function on a university level, it has to be clear that this is a complex problem which surpasses not only the level of the faculty, but also the Technical University as a whole. It's a problem which is in various extents present at technical universities throughout the countries of the EU.

The basic cause of this is that in the EU those attributes enabling the realization of conceptions based on neoliberal economic theories, including their interpretations in the programs of all political parties have gradually, and now in the full extent, been enforced and institutionally-juristically settled.

This led not only to the withdrawal of the state from the fulfilment of basic social functions, which manifests itself in the inability to ensure healthcare for the increasing part of population, its cultural basis, but also that which is the subject of our interest, the required level of education for future generations.

In the post socialist countries these factors expressed themselves in specific forms whereas even more so in the conditions of the nascent Slovak Republic. This was caused by the character of the national economic base that arose after the split from the CSFR (the dominance of primary production departments and thus the production of half-finished products and goods) and the transformation process, i.e. crucial factors that in the entry to the system of work division in the EU determined a significantly asymmetric position. Thereafter the implementing of the so called Washington consensus, without a restructuring and the character of privatization, unlike the other states of the V4, led to the closing down of key businesses and also almost the whole system of establishments of research and educational institutions. That negatively affected the development of the whole educational system of the SR.

Today this manifests in the requirements of the business sector, not only in the change of preparation of graduates of existing vocational high schools and universities, because the content and level of their training doesn't correspond to the needs of the economic praxis.

On the level of high school education this meant the abolishment of vocational schooling and the restriction or the loss of opportunity to conduct professional work experience in establishments.

And so the possibility to acquire knowledge (abilities and skills) necessary for a qualified output of the most basic production activities of establishments began to disappear. Today this is applicable to not only classic manufacturing professions (turning work, materials working, maintenance professions etc.), but especially in relation to new branches whose manufacture is based on complex mechanization, automatization and robotization. This is mainly in professions such as a mechanical electrician, programmer of machine and welding tools etc.).

Management of enterprises that have survived the transformation but especially those originated from foreign direct investment of multinational corporations think about the following solutions:

- By making opportunities for the student's practice during their study but mainly,
- By direct access to the study programs of selected secondary schools.

At this level of education they have designed and applied so called dual system of study, the content of which should comprise of 80% practical training and 20% theoretical studies (Volkswagen have an idea of 70% and 30%).

The goal according to key representatives of Austrian, German and English corporations that nowadays make up the basis of the national economic subsystem of the Slovak Republic is to incorporate all vocational high school leavers into this system by the year 2020 in places of their establishments.

There are the reasons said and explained by director of Miba Steeltec (3) on the following example. Retraining of graduates for the position of CNC machine programmer without a "technical training" takes two to three years and costs the company about € 31,500! If the companies provide three to four years practice to graduates, the cost of their "education" is dropped to 6,800 euros!

Speaking at the same time this also explains why it is better for the companies (mainly foreign) to look for skilled and "cheaper" labour force from abroad.

In this context however one must realise that this approach also at the same time „creates a beginning of a direct way to the change of the educational system, i.e. the processes of education to obtain knowledge measurable by „computable indicators”, which define the

usefulness of a business labour fund!“ The danger of this was pointed out by (2) T.W.Adorno as early as in 1959!

Apart from this, additional questions arise:

- will the number of accepted students be fixed also according to the requirements of „future employers“ or,
- what about those graduates that due to various reasons won't be employed
- because since they didn't acquire skills enabling them to study on a university level, they've lost this opportunity!

Thus what could happen is that these schools will become in principle branches of the above mentioned establishments with all consequences that spring from such an action.

We are therefore faced with a problem the core of which lies in whether we want a high school level of education to be orientated on fulfilling that which is the primary goal of established industrial corporations in our country; that is gaining the most effective use of labour capital, or that which should be the primary goal of our society, the focus on quality education of generations that will decide about the future evolution of our society?

With this, the problem of formatting education in the rest of the high schools which in this way likewise don't fulfil their mission sufficiently is directly linked!

This is highlighted by the fact that implementing the dual type of education in vocational high schools is a necessity arising from two main reasons.

The first reason is the fact that by that action the, organisational structure “of our whole educational system centred on this, is finally melded.

This is so because from the year 1993 there's a consequence of way the so called Bologna Declaration was applied. This Declaration caused that almost all the countries of the EU accepted the Anglo-American three stage level of university education. This however, as K.P.Liessmann correctly stated, in 2005 (2) whilst bearing in mind the bachelors level, could only be relevant in the countries that didn't have a system of vocational schooling. In the time of the acceptance of this in 1992-1993 it couldn't be applicable to the Slovak Republic or the states of the V-4. Because they had, even before the great privatization possessed, within almost all establishments, vocational schools and a build-upon system of industrial high schools ,which had educational programs aimed at all branches of economy and industry. It is also important to emphasise that unlike the above mentioned model, they not only prepared graduates for industrial practice but also for university study. (When two do the same, it's not always, the same!!)

The second reason thus began to be, in the realm of privatization, their abolition. This in our conditions additionally created conditions for the acceptance of a three stage type of university education!!

With this we are led to the issue of university education!

The consequence of this „restructuring “of university education led not only to:

- its leading up to the existing level of education at high schools (look up the levels of preparation of graduates of many general education high schools)
- But especially to the fact that this caused the deformation of the whole system of scientific and research activities and the split of research from tuition.

This has crucial meaning mainly because the implementing of the bachelors level caused the degradation of natural sciences and the social sciences that form the basis of studying. Why do we need mathematics, physics, chemistry, philosophy, sociology, and so on!? Those courses are

the basis for maintaining and developing the university character of university study. They are namely a necessary supposition for finding and understanding the basic dependence and connections and thus also the meaning and social consequences of the studied degree. They allow you to search and find answers to the questions: Quis, quid, quomodo, ubi, quando, cur? (Who, what, how, where, when and why) - see "M.T. CICERO - "Reflections on the causes and context! "

In other words, it can be said that the absence of the discussed ,on the university level of education, contributed to its change to attain the nowadays criticised factual knowledge (the set of information) without the opportunity to understand their social meaning and thus also to the loss of necessary basis for engineers and especially the doctoral level of education!

At the same time , and that is another realm of the problem, it has to be clear ,that due to this it wasn't possible to achieve a satisfactory level of education for new professions, that demanded and still demand changes influenced by scientific and technological development. This is because; practically the whole basis of production, exchange, division and consuming is nowadays represented by technologies which present the highest levels of complex mechanisation, sequencing and adapting automatization. This has changed the organic composition of the work itself in a crucial way. In its structure, the main components have become parts of operation, regulation and management (6) by which the demands from businesses have, when it comes to the labour capital, logically been changed!

At this point it is again necessary to remind , that as long as the whole education system will head to the direction of preparing graduates to the realisation of production programs of businesses and the doctorate (in some cases also the masters) level of education will be rated as a source of their over qualification, in other words , in the education process ,there'll be an absence of knowledge , which makes up the suppositions of their production, including the skills which facilitate the analysis of the nature, assets and social consequences committed to the use of the rapidly changing universe of human findings, the society loses that which is most important, the opportunity to form its own development!

In our conditions this doesn't only mean a threat of turning the national economy into a so called workshop of the EU (which is, as I already stated, also a consequence of an asymmetrical evolution of our economic basis), but also the corresponding work division in the sphere of science and research.

That point explicitly to the focus and means of use of the nowadays critical financial resources for the development of science and research (EU funds). It's not only about the fact that they were 'used' for the construction of buildings and partly for the laboratory equipment and the purchasing of operational devices that were in many cases disposable. (There are studies which demonstrate their average usage at 30%)

The important thing is that the funds were used and are used to the projects of applied research, thus solving problems arising in the existing production and other business processes. As an example under our conditions is a science park TECHNIKOM - TU Košice that is to be focused (see 36 pilot projects) on applied research in information and communication technology, electrical engineering, mechanical engineering, construction and environmental engineering.(7)

This science park is, apart from the mentioned, in principle only a „collection point“ of projects prepared at individual workplaces of the university.

It is most clearly heard from the, Proposal of the Operational Programme of Research and Innovation “approved by the Government of SR on January 2016! At its core is the appeal for

the existing establishments of research and development centres and those that are being made, to form their activities in such a way so as to “attract the cooperation “of investments from private investors, i.e. the business sector!

This is to happen, despite what the German physicist A.Wixforth said in this context. He stated that: „ Research, the results of which even by a bit surpass their use on the market, don’t stand a chance with private investors! “.

The proof that he was indeed right lies in the fact that even now a problem arises with the maintaining of scientific parks. This has to do with the way that they are financed and the necessity to gain financial resources to function and maintain the material components to the granted projects.

This is also confirmed by the fact that the business sector, which in our country is represented mainly by investors from abroad , from the perspective of their development and thus their future, in principle doesn’t have any interest. That’s because it makes the main activity of scientific and development centres.

This concept is also used by the Chinese SRC Corporation. In its manufactory Bag Elastmetal Slovakia in Trnava it produces rubber-metal and plastic silencers of engine and chasses vibrations, for virtually all European car factories, hence also for those that operate in Slovakia. Their development is also dealt with in their own research –developmental department.

It was the understanding of these facts that caused that many European universities, already ten years ago, began to change their study programs in a radical fashion and the focus of research activates in such a way so they could develop their character as universities.

In the US, after all, higher educational institutions of a university character are preferred, since because of their universality, they produce the future intellectual elite of the nation.

Despite this, it is important to highlight that from a short-term perspective the listed programme is in our situation the right solution! The condition however has to be the possibility to use at least a part of the funds focused on the realisation of projects of applied research in the investment funds of the EU, for the equipment of research-developmental workplaces of universities! The first Minister for Education in Slovakia, prof. L. Kovac pointed this out as well.

Apart from this he also pointed out the existence of one of the most important problems which has to do with the orientation of research at our universities. He namely stated that: „The money intended for real scientists in the form of prestigious grants from the EU for research are given mostly to researchers from the United Kingdom, Germany, Israel, France, the Netherlands and Switzerland“(5).

(To this only one additional note, that in the teams that they lead, apart from our top doctoral students, also a lot of scientists from various countries of the former socialist bloc participates in this research).

Therefore it is important once again to highlight that:

- The formation of the character of universities, in the environment of higher education doesn’t mean at all the ignoring of the relation to the preparation of graduates for the job practice.
- There can also be no talk that the universities whilst forming their character should give up on obtaining finances through projects aimed at applied research.
- On this level of education, if they are to maintain their character as universities, it is important to keep in mind that which already F.W.Shelling, I.Kant or W.Humboldt knew, concretely that:., the point of university education can’t be exclusively aimed the

preparation of graduates for a profession, but fore mostly in the scientific work aimed at developing and the subsequent passing on of scientific findings to the societal practice! “ (2)

So we must state clearly the limits of pragmatism of our education system!

Apart from the fact that in the last decade our created system of education doesn't correspond to the requirements of our time, they deepened and still deepen the problem:

- The destruction of a social support of education (all forms of scholarships, funds for accommodation and food, etc.)
- Decrease in the share of national budget funds for the development of the educational system, science and research,
- Low participation of foreign direct investors in the financing of education, science and research (except for projects aimed at resolving their prompt problems),
- the passing on of the burden and therefore a growth of the share of costs that families used on educating future generations (1),
- which causes that due to reasons of „social differentiation “the following grows: the restrictions on the opportunities to study, the number of youths studying abroad!

The above mentioned development caused ultimately also that the costs of businesses for the preparation of their „labour capital “have significantly decreased. In this way the change can only come if the realisation of the so called dual system of education in the proposed way will be partaken by the businesses themselves in various forms. In the instance that it would be financed mainly by resources from the country's budget (therefore the money of taxpayers) this will mean an indirect form of making the costs of private organisation a societal matter!

Considering the listed, it has to be apparent that the sole act of increasing the wage of employees in university education can't be realistic to change the quality of their work or to develop their character as universities!

The listed therefore, now more than ever contradicts not only the requirements for the realisation of our own, knowledge-based economy, but what is most important, mainly for the forming of a knowledge-based society as a basic premise for a sustainable development!

1 A model design to be focused on sustainable development of university character of BERG TU Košice

Before I list the basic characteristics of the proposed solution, it's important to point out that:

- a) The main part of students of the BERG faculty is studying non-mining study programs as results of development after year 1989.
- b) Number of students will fall in the coming years due to objective reasons (demographic trends, the impact of the above factors disassembled) but also due to subjective reasons (social situation of families, and so on.)
- c) The realisation of the proposed model can't have a one-off character, but rather one distributed in concrete steps (however for this to be realised there will be only a time reserve of approximately 5-8 years).
- d) The key to its successful implementing has to lie in the essential change and financing of the research activities of the faculty!
- e) In the case that the above mentioned won't be utilized for the change of the existing state by the realisation of the proposed model (or a different solution) focused on the change of quality which doesn't satisfy the level of its educative function, the faculty will end up in a very complicated situation.

The proposed solution thus lies in (with the awareness that some steps have already been partially completed) in the realisation:

A. In the educational process:

1. Bachelor's degree of education.

- in the gradual transition of all study courses of the faculty to a common bachelor's level of education with the realization of the following:
 - changes in the structure and content of the course based on natural sciences (mathematics, physics, chemistry, geoscience or computer literacy skills),
 - changes in the structure and content of the course of social sciences (philosophy, sociology, ergonomics) in a such a way so they don't link to solely the knowledge already attained on the high school level of education, but that they mainly facilitate the current level of skills corresponding to the methodological-instrumental and sociological-humanities basis for the knowledge orientation of the subsequent Master of Science programme,
 - to include in study programs of every semester of the bachelors level an obligatory practice, focused on the analysis of the manufacturing, organisational, controlling and economic side of the operation of a business. The practice has to be done in a direct link to the analogical arrangement of subjects, whose content has to correspond to the system view on the manufacturing (typological) and other mentioned forms of business operation
 - in the third year of the bachelor's degree to connect the practice with direct participation on projects of applied research at this institute, whose professional profile corresponds to their interest to study the MSc programme
 - the output of this therefore has to be a corresponding, as well as for a concrete project of applied research, focused final thesis.

2. Master's degree of education.

In all the study programs taught at the faculty:

- to decrease the fragmentation of study by reducing the redundant, narrowly profiled courses of study degrees
- to change the content of professionally profiled courses by eliminating useless, oftentimes out-dated factual information and achieve a necessary change of their orientation on the analysis of the causal-consequential side of their relation to the study program,
- gradually achieve a complete connecting of the MSc level of education and the students to deal with the faculty's or institute's projects of **basic (knowledgeable) research**,
- the output has to be the completion of the thesis to the corresponding level!

B. Scientific research activities:

The key to the change of the quality of the fulfilment of the social function by F BERG and thus also the realisation of the proposed model, as it was already stated, has to be the change of the character of the research program!

As a basis for Geology and Mining (two basic study programs) must become:

- a) to make a research project for the entire faculty about „The raw material policy of the SR till the year 2025-30“, focused on the analysis and societal rational use of the source

potential of the SR, profiled by the given program EK from the years 2011 and 2012, especially through the so-called "EU Raw Material Initiative and the European Innovation Partnership",

- b) insuring its financing from EU funds, (mainly from the fond of J.C.Juncker, where approximately 330 billion EUR are concentrated for these purposes, or from its part approximately 80 billion EUR for the specific solution of dealing with the problem of using raw materials– see also conclusions: “European mining revival in Europe“!, of the state and that
- with feedback, i.e. creating of a financial basis which at the same time will facilitate a gradual realisation of a complete redevelopment of the educational function given in points 1 and 2,
 - for the development, but mainly completing of the above mentioned faculty’s research program, to create a group of professionally competent employees chosen:
 - from all institutes and departments, but also
 - co-opt into its framework experts from research institutes, mining and state management (see the experience from the past development of the faculty) that will be subordinated and controlled as well as financed directly by the faculty. In other words to implement **a project-orientated form of management**, which is already successfully realised by many top research-developmental and other organisations,
 - to continue in the getting projects of applied research with the goal to engage all employees of the faculty into their resolving (to abolish the state when the so called employees categorized as research workers aren’t active in the educational process and what is even worse, many of the teaching staff don’t do any, or if so, only a formal research activity).

C. Changes in the faculty management.

Likewise it’s important to state that the above mentioned can’t be accomplished without the change of management and thus also the staff and function of all elected and appointed officials responsible for managing the faculty.

The increase in the effectiveness of the whole system of managing the faculty requires that:

- the scientific council of the faculty is able to develop a basic framework to subject and timely orientated program guaranteeing the fulfilment of the above stated changes.

This will require, as the experiences of universities show, that are successfully solving these problems, to delegate professionally prepared people into these functions and during this time to free them from other activities of the faculty!

- **the change of the motivational system** of the employees of the faculty and mainly the motivating beyond the faculty’s experts, engaged into solving the said project in a part-time basis). It will have to be aimed at achieving an effective connection of teaching activities with the priority of active participation on solving the faculty’s oriented project „ The raw material policy of the SR“ and subsequent projects of applied research on the level of individual institutes or directly connected to the fulfilment of the said goal of the faculty.

The philosophy of the said proposal derives from the understanding of the following facts:

- in the occasion when because of the above-mentioned reasons we have to admit to the likelihood of a consistent decrease in the interest in a university education in general and in F BERG specifically, the existing system of financing universities, which is

dependent on the number of students and financing projects like VEGA and KEGA can in no case guarantee the realisation of the change that is needed regarding the quality of the educational process,

- to receive additional financial resources from the state budget for the development of education isn't realistic (ref. the agreed state budget for 2016) and the scope and focus of the so called ,‘increasing‘ of financial resources into education, science and research“ proclaimed by the succeeding government is unclear,
- the requested change of the quality of the work of universities, by partially and short-term changes (always implementing new and new individually fitted study programs and „research projects“) is impossible to achieve,
- this sort of model practically keeps the, status quo and thus has used up all of its possibilities,
- at the same time it inhibits the faculty to effectively do its function, that it brought upon itself, i.e. the function of a strategic partner and to likewise create a technological platform for the realisation of the raw-material policy, understood as an integral component of the long-term orientation of the economic policy of the country

Conclusion

To look for changes leading to training highly qualified experts for the creation and realization of a knowledge-oriented economy , for the practice ,but mainly a knowledge oriented society, i.e. an insufficient educational system (for example by the above proposed way) clearly confirms these realities:

1. First the fact that due to the quick changes and intensity of globally functioning economic and ecologic factors and geopolitical turbulences, hence to create in our case a raw material part of economic policy on the level of the EU, but mainly that of individual states as it was conceived in 2004 and the consequent modifications, and frame worked with a valid mining and geologic law is no longer possible.
2. The second is the fact that the SR compared to not only other EU countries but also in the larger framework of the OECD countries from the point of innovations, clearly belongs to the worst!
3. The third is the consistently low level of investments (depositing of public finances) into science and research, as well as education. The proof that one can't expect any necessary changes is shown in the state budget for 2016 approved by the Slovak National Council!
4. The fourth fact is that if F BERG would want to be a strategic partner to the bodies of the SR (The Ministry of Agriculture, Fisheries and Food and the Ministry of Environment) for the creating of a raw-materials policy, has to realise that it has to be formulated as an integral part of the economic policy of the state. It has to be therefore broadly prepared for a long- term oriented program which surpasses the interval of the political framework (i.e. one electoral cycle!) as well as its own election cycle!

Or otherwise said, only in the occasion that the faculty will be prepared to react on the above mentioned changes, will it be able to effectively step into the processes of forming that which is important, the intellectual elite of the society.

It is obvious that the character of the educational arrangement was and will be a mirror of the level of the whole societal system!

Therefore, we can no longer repeat previous mistakes, so as to bear in mind that which Heraclitus from Miletus defined when he said: „You cannot step twice into the same river! (but also that which the famous Czech comedian J.Rencin said, for although he agrees with the statement, he doesn't hesitate to add that „One may step into the same shit dozens of times!).

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