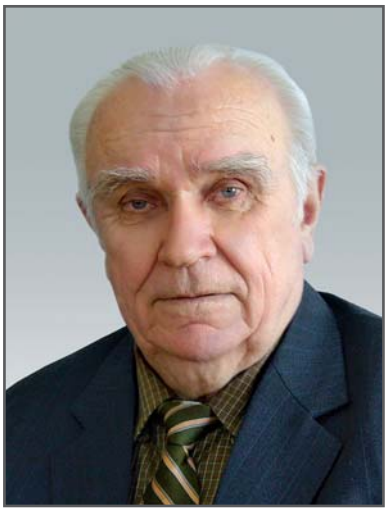
A SCIENTIFIC AND PEDAGOGICAL SCHOOL AS A BASIS OF THE INTELLECTUAL POTENTIAL OF A UNIVERSITY



Mykola Khorunzyi
Candidate of Economic Sciences,
Professor of Agroindustrial Formations
Economics Department,
Kyiv National Economic University
named after Vadym Hetman

Annotation

This article highlights the methodological and adaptive aspects for the interpretation of the essence of a scientific and pedagogical school as the main criteria for the evaluation of the intellectual potential and public recognition of today's universities. It determines the key signs and mandatory attributes of scientific and pedagogical schools, the position of a university department in it and their specific features for economic university institutions. The article examines the continuum of university scientific-pedagogical schools, models for their innovative oriented activity and organizational support mechanisms.

Key words: scientific and pedagogical school, continuum of university scientific-pedagogical schools, organizational support of scientific-pedagogical schools, university department.

Modern university practice in Ukraine requires the transition to an innovative model of development, the determining credo of which is the intensification of the influence of universities on the level of cultural and scientific-technical advancement of society, the expansion of skills among the young for the purpose of harmonizing a person's interests and intensifying his/her participation in the development of the national economy in line with the demands of the 21st century.

A significant impact on this should be universities joining the *Magna Charta Universitatum,* which determines the main principles for the functioning of higher education under the influence of the Bologna Process.

This means, that the time has come to clarify the readiness to work under new standards and principles, which requires, first of all, an in-depth understanding of current needs regarding the modernization of education; secondly, a detailed analysis of the completed stage from the position of the gradual development of the scientific, as well as the learning and teaching process; thirdly, the readiness of scientific and pedagogical staff to embrace innovations. In connection with this, it is worthwhile to place particular emphasis on the fact that during 105 years of its existence, our university has achieved and done quite a lot for the requirements of the Charter to become an everyday plan.

One of the objective criteria of an evaluation of such readiness on the part of the university should be the scientific-pedagogical school, which personifies the unity of the scientific and educational process as an indispensible basis of modern university education. It is a scientific-pedagogical school that is capable of resolving two fundamental tasks: first — to give students comprehensive, scientifically enriched knowledge and second — form an adequate system for evaluation of this knowledge. This should become the principle for the operation of each university department.

The scientific and pedagogical activities of our university convincingly attest to the fact that most of the departments, from their establishment until the

present day, are and continue to be centres with a high and powerful potential in the area of conducting scientific research and the training of scientific and pedagogical personnel and specialists of a general profile for the needs of the national economy.

At the same time, as fairly pointed out by the Rector of KNEU and Member of the Academy of Pedagogical Sciences of Ukraine, A.F. Pavlenko, in his address to readers in the first issue of the new journal «University Education» «today, we are living in a world, which is becoming more closely correlated than ever before, and the escalation of both international competition and expanded cooperation make knowledge and competence strategically important resources for the global leadership of international organizations»[1]. This is why each department and each faculty must be guided by the objective need to generate new knowledge as a sort of intellectual resource, which can ensure not only relevant competitive advantages, but also the subsequent development of the understanding of the necessity of learning throughout life, which in its turn should be considered as a significant propeller of qualitative economic growth.

Of course, one has to agree that a decisive and integral feature of such perceptive advancement can be a scientific-pedagogical school, which has acquired certain historic roots and due recognition by the public. The truth is irrefutable: a university can be considered to be a national one, if it has strong scientific-pedagogical schools, which in fact ensure its public (domestic and foreign) recognition as a higher education institution, and confirm the authority and position of our country in the world.

Official recognition of the scientific-pedagogical schools of any university will become significant and objective evidence of its viability and place in the Ukrainian higher education system.

It is necessary to have official support in the area of the determination of such a category as a university's scientific-pedagogical school, at least on the level of the Ministry of Education and Science of Ukraine. This is particularly so because the very name of the ministry attests to the organic symbiosis of science and education at a higher education institution.

In contrast to established notions of «a scientific school» and a «pedagogical school», a scientific-pedagogical school can be characterized as the intellectual potential of a department which, with its developments in scientific activity and achievements in teaching and pedagogical activity, has attained the recognition of the public and remains a leader for all other educational institutions in one sphere of knowledge or another. A scientific-pedagogical school is a mandatory component of the evaluation of universities as a whole.

A scientific-pedagogical school should be viewed, first and foremost, from the position of the formation of scientific and pedagogical personnel. However, it should be noted at this stage, that this process has its own specific features and differences, in comparison to the recreation of scientific personnel in scientific and research institutions, which generally have a narrow (single) specialization and where the training of scientific personnel is conducted exclusively in the area of the scientific research of certain issues, directions and paradigms of a scientific nature. The formation of a teaching staff is based on the fact that during postgraduate and doctoral studies, there is an organic joining of scientific and pedagogical activity. More specifically, faculty postgraduates undergo teaching practice, performing the relevant mandatory load in either the teaching of disciplines, or in conducting seminars or practical work. Students enroll in doctoral study departments (associate professors, as a rule), who already have specific acquired and successfully developed experience of scientific and pedagogical work.

For this, it is important to stress that in the practice of higher education institutions, there are quite a few instances of a person with a very high level of essentially scientific qualification, being unable to adapt to the specifics of the learning and teaching process. This is what can explain such everyday interpretation as «not everyone can be a teacher». In order to comply with his/her vocational appointment, a lecturer at a higher education institution must:

1. Be a highly erudite person in the area of one skill or another.

2. Constantly work on scientific research and implementing results in the teaching process.

3. Continuously improve his/her teaching skills, in other words, the ability to draw the attention of the student auditorium by means of using modern teaching methods and all-round erudition in a specific discipline.

4. Have excellent mastery of the methodology for the teaching and evaluation of students' knowledge by means of the intensification and individualization of classes.

5. Be guided by the main principle of the learning and teaching process, based on which. the student should be evaluated as an equal partner, who has enrolled at the education institution to gain knowledge, necessary to him/her for his/her successful job placement on the labour market, where a relevant competition reigns.

If one is guided by these principled requirements, it is possible to unambiguously confirm that compliance with them is the fundamental formation of a scientific-pedagogical school at a department.

[1] *A.F. Pavlenko*. Introduction of the Rector of Vadym Hetman Kyiv National Economics University // University Education. — 2011. — No. 1. — P. 1.

Understandably, time is necessary to achieve such a status, which could take years. In any case, regarding the specific features of our university, the formation of scientific-pedagogical schools at departments, has different age-specific roots: some of them originated in pre-revolution times (prior to 1917); others were formed during pre-war times (prior to 1941—1945); still others developed during the post-war period. It is also worth noting that during the years of Ukrainian independence, relatively new scientific-pedagogical schools have emerged and developed significantly.

Regardless of the age of the scientific-pedagogical school, a mandatory attribute, which is determinant by its features, is the founder, and his/her followers — continuers. Figuratively speaking, a true scientific-pedagogical school, recognized in the scientific and pedagogical environment must be built on the basis of a «father—son—grandson» scheme. Such a principled approach offers the possibility to objectively evaluate the scientific and pedagogical activity of departments and, most importantly, determine the vector of their activity from the position of responsibility of both modern needs, and the needs for the training of highly qualified specialists of a certain vocational orientation. Due to such an algorithm, a scientific-pedagogical school gains the features of continuity and consistency in its development. And this, in turn, complies with the requirements of the Bologna Process, which recognizes the objective requirement to join scientific-research and learning-teaching works together at education institutions as the basis for the progressive development of world universities.

It is the Bologna Process that is the objective requirement, which determines the need to join together research and teaching activity as an indispensable base of university education, since it is accepted to recognize universities as centres of cultural, scientific and technical development, where culture, knowledge and research concentrates. In contrast to the scientific schools of scientific-research entities, scientific-pedagogical schools at higher education institutions bear a double obligation. On the one hand, the teaching staff has to comply with its designation and the challenge of the progressive development of science (in any sphere of knowledge) and is obligated to conduct scientific research of a fundamental and applied nature. Of course, as a result of scientific activity, to a certain extent, the conclusions, proposals and generalizations are used in the learning and teaching process during the teaching of certain disciplines. Actually, this is how the education process is updated and provided with scientific depth. Secondly, in order to teach disciplines on the level of the requirements of the 21st century, academic staff are called upon to extend their pedagogical skills and satisfy the growing needs of the students' auditorium, be consistently concerned about introducing new technologies into the learning and teaching process, the overall modernization of education, build learning and teaching on the basis of active teaching methods, the individualization of tasks and the computerization of the process for the formation of practical skills. This requires considerable efforts, mental and intellectual energy, as well as constant orientation towards the modern world achievements of universities. In addition to this, a professor or associate professor, who teaches disciplines, cannot be trapped within just the limits of his teaching programme. To a certain extent, he/she must be an encyclopaedist.

Teaching any university discipline today in merely such a way, as required by the programme, is impossible. It is vitally necessary to combine your discipline with others, find connections between them and create a certain structural-logical dependence, interconnection or adaptability. In other words, a modern University lecture should be of an investigative, research and problem, rather than a cognitive nature. This is particularly important for those departments, where teaching has full methodical support, in other words, includes textbooks and manuals for independent study, practical work and software. In no way can a scientific-pedagogical school be viewed as the mechanical combination of the scientific and pedagogical activity of a teacher. It's true, at first, essentially formal glance, this is how it looks. If one is only guided by this principle, in practice, it would be possible to conclude that each department of a university is a scientific-pedagogical school.

In reality this has to be looked at differently. More specifically, it is necessary to differentiate the provisions of such fundamental weight:

1. Without doubt, a scientific-pedagogical school should have certain achievements and results in the area of scientific, as well as learning and teaching work. This is a starting point, of sorts.

2. A scientific-pedagogical school is initiated, given birth to and operates under one important condition: scientific research must be directed not only towards the area of the innovative development of science, society and the economy, but also the innovation of the learning and teaching process. Clearly, it would be fair to stress the interdependent notion that the scientific activity of the teaching staff at a higher education institution must be directed towards improving teaching work and the deepening of students' knowledge.

3. A department's scientific-pedagogical school can be considered one, which in the sphere of scientific and pedagogical activity, has developed (or in an extreme case, improved) certain

methodologies of both scientific search and the teaching of disciplines of a learning and teaching curriculum. The point is that to the extent of the development of the national economy, improving and accelerating economic and social connections under the influence of the action of market mechanisms, the need to expand both fundamental and applied research becomes a priority. Clearly, this question requires an in-depth scientific approach, broad strategic thinking and the understanding that without scientific substantiation of advancing development, it will simply be impossible. This is why relevant methodologies, new approaches and the measure for evaluating social and economic processes must be implemented. These elements of the responsible nature of innovations have to gain an adaptive nature and during the course of teaching a discipline, so that a student can prepare himself/herself for efficient activity in practice.

4. Only strong scientific-pedagogical schools, which have developed and tested teaching and research methodologies are capable of training competitive specialists, who are able to forecast technical, public, economic and social processes, analyze complex situations in society and develop efficient proposals.

5. The unity and interdependence of the scientific and pedagogical process must be determinant in the status of scientific-pedagogical schools. At that, the department decides for itself which of its representatives is given preference in scientific or teaching activity. One of the only criteria for the evaluation of the activities of a department must be the unity of these two components.

For economic universities, particularly ours, the status of research and pedagogical schools is somewhat specific. This is explained by the fact that in the economic science process, the recognition of social and economic phenomena is movable, which is determined by the very nature and dynamic character of economic development. And this requires the constant expansion of both knowledge and scientific research, the formation of new paradigms and concepts, as well as comprehensive learning in the world achievements of economic science and practice.

As a rule, modern scientific-pedagogical schools guarantee the full learning, teaching and methodological support of one discipline or another. This means the following:

— modern textbooks and manuals for independent learning must be prepared for these disciplines;

— classes should be of a non-traditional (general-cognitive) nature, and become investigation, problem and discussion-based;

— during lessons and when students execute independent work, an individualization method, the resolution of situational tasks and the use of modern research methods should be extensively applied;

— since they are mandatory elements, course work and degree theses must contain specific reasoned recommendations or conclusions;

— the entire learning and teaching process should be built on the principle of the self-fulfillment of the student in the area of disciplines, which form his/her professional training.

It is worth emphasizing one more detail of the activity of scientific-pedagogical schools. The point is that the innovative process in learning and teaching becomes a joint task for both the teacher and the student. For this purpose, the basis for these specializations can be conducting such mandatory discipline as «Fundamental Principles of Scientific Research», which is capable of giving the learning and teaching process an investigative and research nature, which can later be embodied in course work and degree theses, as well as the participation of students in scientific conferences, symposiums and discussions.

On the basis of such preliminary considerations, it is possible to determine the mandatory attributes, which should characterize a specific scientific-pedagogical school, namely:

— the name of the scientific-pedagogical school;

— an objective description of the school's founder;

— scientific and pedagogical doctrine (problem), initiated by the scientific-pedagogical school, and its advancing development;

— the creation of a fundamental theoretic-methodological and methodical base on the problems of the scientific-pedagogical school at the department;

— a list of monographs, memorandums, scientific reports and textbooks, which reflect the direction of the scientific-pedagogical school;

— the composition and defense of candidate and doctoral theses;

— the development of recommendations for production as well as learning and teaching programmes;

— appearances at scientific and practical conferences (domestic and foreign);

— participation in the drafting of acts of state and legislative documents;

— relations with foreign educational and scientific institutions;

— prizes and distinctions of the department.

A scientific-pedagogical school should be viewed as a productive influence. The point is not only about how well-known it has become in the scientific and pedagogical space, but rather about the extent to which its activity has become oriented towards the continuous improvement of knowledge, qualification level and learning. In other words, whether such

a school was able to create an atmosphere of continuum. This applies equally to both the teaching staff and the students. This can be achieved under one condition — the innovative moving forward of the university school. It cannot exist without innovation in science and pedagogical activity.

Based on the above, it can be seen that the need for innovation is an objective condition for improving the entire system for the training of specialists. Innovations are equally necessary in the teaching of disciplines and in the learning and teaching of students. Otherwise, it is impossible to ensure the training of highly qualified specialists in accordance with current requirements. And since development is a dynamic process, the need for advanced training must be laid down during the course of the learning and teaching itself. Moreover, the life cycle of knowledge, particularly in the field of economic science, is quite movable, which is why the teaching staff must also continuously strive to improve their skills or the level of scientific quality and objectivity of the techniques for passing them on to students, in order to ensure continuum. The following conclusion emerges: all the activities of a university's scientific-pedagogical schools must be built on a constantly repeating cycle, beginning and ending with its innovations.

Thus, innovations in scientific and teaching activity should be considered an integral and determinant characteristic of scientific-pedagogical schools. A department can have a highly qualified teaching staff, but when clear stagnation was noted in scientific and pedagogical work and there was a lack of improvement and signs of continuum, such a department cannot be viewed as a base for the formation of a scientific-pedagogical school.

The existence of scientific-pedagogical schools at a university is not yet proof of their vitality and viability. It is necessary to clearly understand this important detail: the advancing development of scientific research and teaching methods can only be ensured if the eternal «teacher — student» tandem is interested in it. In other words, for a scientific-pedagogical school to exist, it is necessary to have the relevant motivational approach, which also has to be subject to continuum requirements.

It is here that a whole motivational system, which has to determine the expedience of the training of specialists on the one part and the essence of national education policy on the other, is formed. In other words, the motivational factor of the functioning of scientific-pedagogical schools must be equally laid out and formed by both the state and each university. But this now depends on the requirements of the national economy for specialists and the readiness of the education environment to meet these requirements. All of this brings to mind the thought that scientific-pedagogical schools can be formed and can function in a society that is interested in this, in other words, one which creates conditions for the development of university education by innovative means. If the above-mentioned considerations are generalized as a whole, the overall scheme for the organizational support of scientific-pedagogical schools under current conditions can be determined as follows (Figure 1).

This figure indicates the sequence and legacy principle of scientific-pedagogical schools, which provides for innovation and motivation as mandatory elements. Obviously, the task of a scientific-pedagogical school, just like that of university education as a whole, lies in the fact that it is necessary to provide students with such a level of knowledge, in other words, to form its professional potential, which in time, will transform into human (intellectual) capital, capable of providing a relevant income.

Of course, this can be attained on condition that the student masters the deep theoretic knowledge and practical skills, which will give him/her a competitive advantage on the labour market. This is why a clearly functioning motivation system for both learning and teaching must be determined. On these grounds, it is possible to confirm that such a result should be the burden of each scientific-pedagogical school.

These considerations allow us to come to the following conclusions:

1. A scientific-pedagogical school should be interpreted not only as a simple combination of education and science, while the potential of the department or higher education institution, which in the area of scientific research and education activity gained public recognition, remains a leader for all other education institutions in a certain sphere of knowledge, capable of forming highly qualified specialists on the level of current requirements.

2. The main indications of a scientific-pedagogical school are:

— a voluntarily formed team, which joins together scientific-pedagogic employees of different generations and with different scientific qualifications, whose activities are directed towards the improvement of the methods and practices of scientific research, their extensive application in the learning and teaching process and the implementation of innovations;

— creative cooperation in the area of the scientific research of actual theoretic and practical issues in the scientific sphere and their adaptation to the teaching of academic disciplines on the basis of developed methods;

— the availability of a scientific-pedagogic leader — the founder of the school, who in his/her time, brought forward original scientific ideas and pedagogical approaches for teaching disciplines in the department (or original doctrines for their

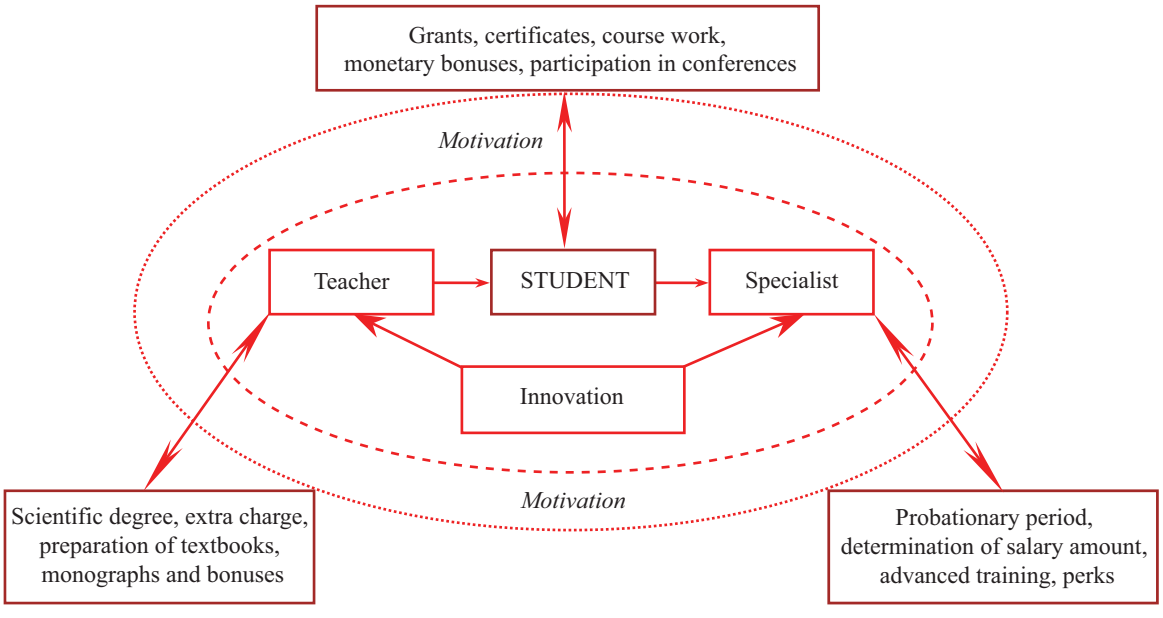


Figure 1. The Organizational Support of Scientific and Pedagogical Schools

integration), which provided the push for the further development of the department in the area of innovation in scientific and pedagogic activity;

— the implementation by the department of common approaches and the comprehension of methodological principles, type of thinking, modes of the analysis and teaching of scientific disciplines (distinct from those in other departments), the availability of necessary analytical material at the department, research and teaching methods, as well as the development and generalization of a necessary theoretic base;

— the attainment of certain results in scientific and pedagogic activity, which gained recognition both in Ukraine and abroad, and have unconditional prospects for further development;

— the availability of materials required for the schools' activity (textbooks, manuals, workshops and monographs), which with their direction, correspond with the selected doctrine, are subordinate to it and are evidence of its progressive development;

— the legacy of the scientific-pedagogic activity of a school by young scholars and teachers, the engagement of students and postgraduate students of the department in the work of the school.

3. The formation of a scientific-pedagogical school is stipulated by the status of long-term scientific and pedagogic acquirements, which are passed on to the next generations of teaching staff. In relation to this, the leader-head of the school, who enjoyed (enjoys) specific scientific-pedagogical authority, also foresaw (foresees) prospects and real possibilities for further development, in the direction (directions) of scientific-pedagogical activity initiated by him/her, plays a special role.

4. A university department is the exclusive basis for the formation of a scientific-pedagogical school. In individual cases, a school can be formed on the basis of several departments, depending on the level of similarity and interdependence between the disciplines of the teaching plan. Since modern departments encompass dozens of profile disciplines, several scientific-pedagogical schools can form and function within its framework.

The inclusion of Ukrainian universities in the *Magna Charta Universitatum* naturally requires adjustment, and in individual cases, also a fundamental review of the selected strategic line, which obviously, only scientific-pedagogic schools can ensure. This is stipulated by the following objective circumstances:

1. As determined by the Charter, prospects for the expansion of cooperation between all European countries stipulates the necessity to understand the specific mission of universities, which, in addition to their traditional recognized role — to provide society with highly qualified specialists, must focus ever more attention on the formation of highly cultural, scientific and innovative components in students. Only universities which have relevant intellectual potential and formed scientific-pedagogic schools have these capabilities.

2. The modern world, with its all-round informatization and computerization, which ensures extensive access to diverse literary, historic and professional sources, presents students with new enhanced tasks — to orientate themselves to the needs of individually serving the interests of society, as well as its cultural, social and economic achievements. And this means that

must generate comprehension within the student environment that without its direct participation, it's impossible to ensure the progressive development of the scientific, production, social and education spheres of society as a whole.

3. University education must also serve the interests of the change of the world-view and professional position of the generations. A determinant feature in this plan should be the comprehension of the fact that the skills of professional activity, acquired during the learning and teaching process at university, as well as the world-view behavior in society, should form the necessity in the student, to pass them on to their children and grandchildren. In view of this, scientific-pedagogic schools are called on to ensure relevant harmonization between education and training, so that each graduate can be a continuator of their achievements and traditions in following generations.

The *Magna Charta Universitatum* determines the main principles, which have to become fundamental for universities. The most important of them directly address scientific-pedagogical schools. We shall examine them in greater detail:

1. The university is an independent entity in society. It creates, teaches, evaluates and passes on culture, with the aid of research and learning and teaching, which is the foundation of a scientific-pedagogical school.

2. To satisfy the needs of the outside world, university research and teaching activity must be moral and intellectually independent of any political and economic power.

3. Teaching and research work at university should be indivisible, in order for the learning and teaching contained therein to correspond with the changing needs and requests of society.

4. Freedom in research and teaching activity is a fundamental principle of university life. Key bodies and universities, each within the framework of his/her competence, should guarantee compliance with this fundamental demand.

5. Rejecting intolerance and always being open to dialogue, a university is an ideal place for the meeting of teachers, capable of passing on their knowledge and who have the necessary means for their improvement with the aid of research and innovation, and students, who have the right, capability and desire to enrich their intellect with this knowledge.

6. A university is the keeper of the traditions of European humanism. When fulfilling its calling, it constantly strives to achieve universal knowledge, crosses geographic and political borders and confirms the urgent need for the mutual knowledge and interaction between different cultures.

As we can see, the very essence of the principles determines the behavior of universities in the modern world. Only universities that have gained relevant recognition can be ready to take the path towards European scientific-education integration. Of course, this can only be achieved by universities where scientific-pedagogic schools have been established and are running successfully.

However, even under conditions of the existence of such schools, integration in the European scientific and pedagogic space demands, and will always demand the expansion of both scientific research and the technology of teaching university disciplines. And this, in turn, establishes a need to develop an agenda for a system of measures for the implementation of the demands and principles of the *Magna Charta* at the level of each university and its departments.

According to the principles of university life declared by the Charter, particular attention should be paid to the following, when developing a system of measures for integration into the European scientific-pedagogic community:

1. The teaching staff must have free access to scientific research and the teaching of academic disciplines, each professor, associate professor and lecturer must be provided with the necessary means for the practical realization of his/her inquiries and opportunities.

2. The formation of the university's teaching staff should be based on compliance with the fundamental principle of the inherence of research and teaching work.

3. The Charter also anticipates the provision of relevant guarantees to students regarding compliance with the freedoms and conditions, under which they could attain their goals in culture and education. At the same time, each university has to base its actions on its own capabilities and specific circumstances.

4. European universities consider the mutual exchange of information and documentation as well as an increase in the number of joint projects in both the sphere of scientific research and in the development in education, as a fundamental element of the continuous advancement of knowledge.

The above-mentioned recommendations are called on to stimulate the mobility of teachers and students. In addition to the above, this requires the implementation of joint policies in the area of ensuring the equality of knowledge, exams, as well as the allocation of grants and other attributes of student life. From here, it follows that scientific-pedagogic schools face new, responsible tasks. Their generalized criteria can be summed up as follows: the only scientific-pedagogic school that has the right to consider itself to be one, is if it has become well-known in European space for its scientific and pedagogical potential, and experience of its activities is directed towards the formation of an effective state policy in the sphere of university education and science.

The Road to Competitiveness: The Importance of Database Access at a Research University

Gerald Groshek
PhD, Professor, School of Business,
University of Redlands, CA USA

Annotation

The article highlights the place and significance of the information factor in ensuring and building up the international competitiveness of research-intensive universities. It examines current trends and dynamics of the publication activities of scholars in the sphere of economic research. With the aid of a correlation and regressive analysis, the significance of international cooperation for increasing the volume of the publications of researchers in renowned economic journals has been established. The necessity of the expansion of international cooperation between Ukrainian scholars-economists and their foreign colleagues and partners, for the purpose of increasing the competitiveness of Ukraine's research universities has been substantiated.

Key words: the competitiveness of a research university, publication activity, international cooperation in the research sphere, electronic sources of information.

Each year the Swiss business school IMD compiles a *World Competitiveness Yearbook* that ranks the relative competitiveness of economies among a group of fifty to sixty countries[1]. The range of criteria upon which the ranking is based includes over 330 factors that reflect the economic performance, business and government efficiencies, and infrastructure conditions within each national economy. Within the subset of infrastructure conditions, numerous aspects of a country's educational system and scientific resources are acknowledged as important sources of economic competitiveness. Among the factors included here are the quality of university and management education, as well as the ability to create knowledge and transfer innovation between academia and business. From a quantitative perspective, the IMD report incorporates such metrics as per capita spending on education, the number of science degrees granted, and the number of scientific articles published. Other, more qualitative indicators, include the effectiveness of language skills, the production of high quality research, and the attractiveness of the environment for researchers.

In a parallel and more detailed manner, recent studies (World Bank 2002, Altbach and Salmi, 2011)[2, 3] focus on the contributions made by research universities to social, economic, and political progress through the development of human capital, the creation of knowledge, and the generation of technology. For all countries, the ability to nurture and retain a capacity for innovation, along with a proficiency in the application and transfer of knowledge, are essential elements in constructing a productive,

[1] IMD. (2011). *World competitiveness yearbook*. Lausanne: IMD.

[2] World Bank. (2002). *Constructing knowledge societies: New challenges for tertiary education*. Washington DC: World Bank

[3] Altbach, P. G., & Salmi, J. (2011). *The road to academic excellence: The making of world-class research universities*. Washington DC: World Bank.