International Archive of Applied Sciences and Technology, Vol 2 [1] June 2011: 01-13

ISSN 0976- 4828
http:// www.soeagra.com

RESEARCH ARTICLE

The Physics Engineering Profile and Possible Opportunities for Technology in the University-Industry Cooperation in Turkey

Burhan Davarcioglu
Aksaray University, Faculty of Science and Art, Department of Physics, 68100,
Aksaray- TURKEY
Email: burdavog@hotmail.com

ABSTRACT

Physics engineering"systematic thinking" and"mathematical thinking" skill. In other words, physics engineering, "the use of scientific knowledge in practice" is. In general sense, engineering in fact is "creativity" it produces thought and product, so the engineering is "ergonomics" and "applicability". The main function of an engineer is to design and build structure (construction). So the engineering is science of application and mathematics towards designing and constructing. In the physics engineering education, by taking individual differences into account, trend of adopting multi faceted approaches in quality and type of education of individuals is fundamental. Moreover, people skills, learning abilities, personal characteristics, and past experiences are the other main factors to be considered in the provision of educational services. Applied physics engineering departments are responsible for pioneering in the areas of science and technology other than education and training programs they currently offer. This can only be achieved through the projects of the administration towards science and technology. Consequently, it is important for the country to move from the stage of technology transfer to the stage of generating technology through major restructuring. The reality of engineering education preference of the first two thousand most successful students in the nation-wide qualification exam for the college entrances would be turned into an advantage for the country. This could only be achievable through right content of the education and training program and basic elements of such program that will be offered to these demanding and enthusiastic brains. We live in a world where the ability of societies to produce knowledge and to convert it into economic and social advantages reshapes the national economies and social lifes. Subsequently, in order to keep pace with this, we suggest strengthening nation's technologic infrastructure through suggested physics engineering profile.

KEY WORDS: *Turkey, science and technology, physics engineering, profile*

INTRODUCTION

In contrast to the industrial revolution the next world order, individual happiness and the importance given to the individual, the importance given to production and capital have taken precedence. Individual in life can the most important driving force of change as a result of "human values to the fore". However, individuals showed "emotion" is a result of changes in individual life. Individual identities function in proportion to the changes, the changes in individual life can also remarkably quick and intense.

Those encountered in the individual life can change, for the individual and the society's new "opportunities" provided by some as legitimate "concerns" of brings. However, it gave its name to the information age "knowledge management", perhaps fundamentally changing the lives of individuals today and one of the driving forces pushing them to gain new skills. Development of critical thinking and problem solving capabilities of individuals in business as a result of solving the problems they face while performing the tasks undertaken or at the same time to use these skills to become more creative in the business environment have led to [1]. Rapid and extensive developments in technology as intertwined, based on the technological structure of production and employment profile and the production on the basis of norms in this "industry" is changing the concept of seeing. New technologies destroy the phenomenon of change in the current economy, the impact of industrial branches, new branches of industry is far more important effect of giving birth. For him that the these two cases, in particular, national policies, strategic planning, or determining the "change in the industry and new industries" as needed to deal [2]. Today, the production base, particularly physics, engineering technology, including information technology, biotech-gene technology and new advanced materials-nano technologies and is undergoing change in a certain way.

Today science and technology, both with each other, competing in an exciting way, as well as in cooperation with each other. University-industry cooperation on this subject, is inevitable and has a vital importance. In the academic sector, training programs of particularly physics engineering, we

first of all, the industry also have to develop the requirements and expectations do not present again. Today, our country's universities and engineering faculties in Turkey, especially in the 21st engineers raising the century of physics engineering, another major task falls to us and our creativity in using available knowledge, and develop new and unique technologies to save our country from being dependent on imported foreign technology.

Development, growth, raise living standards in providing security and technological knowledge is related to the production and implementation. Technological knowledge but also R & D (research and development) is obtained as a result of the work. Emphasis to information, knowledge production in developed countries today, countries started long before the work strain is present. Seventy million people, our country is a big country, but also many young population, and geopolitical location, has the advantage. But missing so far improve not reported enough human resources and technology. Currently in our country is not producing information consuming, and exporting it to buy a case of a country is dependent. Industry under the rules of free market economy, the world market to obtain competitive advantage required to continue its technology to produce products to international markets [3].

The difference between the scientist and engineer, both of which deal with the basic sciences and higher mathematics uses. However, scientists, engineers use the basic sciences and mathematics to produce new information, the same information in a system, a product, process, and uses it to produce a service. Scientist trying to make the discovery, no non-engineers engaged in creating something new. Physics engineering a "systematic thinking" and "mathematical thinking" skill. In another sense, physics engineering, "the use of scientific knowledge in practice". In general engineering "creativity" is the product of thought and creates a thought, produces, so the engineering is "ergonomics" and "applicable". In other words, people comforting of working conditions, increase safety and productivity purposes. Engineer's main function, the design and building structure (construction) and the engineering, design and structure an application to create a science subject (science of application) and mathematics.

McCarthy [4] affirms that one characterization of the distinction between science and engineering is that science aims to build theories that are true, while engineering aims to make things that work. The disciplines have different aims-models or theories for science, artifacts or processes for engineers. Science aims to understand the world, whereas engineering aims to change it. Science and engineering, although complementing each other, have different purposes and do not use exactly the same kind of knowledge. The logic of science is the logic of the "what-is"; the logic of engineering is the logic of "what-might-be", the logic of "what-is-possible". Science is oriented and determined for "what-already-exists"; engineering is oriented by purposes and objectives toward "what-is-not-existent-yet". Truth is the purpose of science; to produce useful things and to generate human benefit is the purpose of engineering. In science, truth is an end; in engineering truth is a mean for generating human benefit and usefulness. Science for many scientists and philosophers (especially Aristotelians and Thomists or Neo-Thomists), an end in itself; but engineering activities are a mean for the production of useful things and the generation of human benefit. Scientific knowledge is a necessary input for how it is usually defined engineering as a profession in modern times, but it is a desirable input for the general notion of engineering.

Science and engineering depend on each other and upon business process skillsfor the successful conversion of knowledge and experience into something useful. They need therefore to work more closely together [5]. In technological innovations science, engineering and business process skills combine synergistically in order to transform scientific knowledge into products or services useful to society, or into technological innovations. This is one of the reasons why there is an increasing awareness about the high desirability of including entrepreneurship skills and motivation in the (academic and/or corporate) preparation of engineers.

Change caused by developments in technology, physics engineering skills assessed as the increase in revealing the possibilities. However, this next example, society and man's life style, thinking style, or value judgments are major changes. These changes across the physics engineer, the design must take into consideration while building or structure as restrictions are required. In general, renewability, re-manufacturability and ergonomics, ecological and environmental sustainability, an engineer in front of the new restrictions. These restrictions to solve the problems of physics engineer, participated in a

systematic point of view of production or innovation (innovation of producing or renewal) process to create social and environmental impacts of the economic effects must also take into account [6].
Physics engineer, the focus of the research area and by issues of science, technology and innovation only one result (or a new product is a set of knowledge and experience), rather than as processes that give rise to these results, in other words, the "scientific and technological research activities", product, method and system based on technological development and innovation activity, as well as the process to understand and evaluate the need for them to hear [7]. We could do this, the extent of change or innovation in science and technology activity in the right assess us know consider the consequences. In this regard, such activities are also doing research on methods and techniques used to assess the need arises.
Development and specialization required qualified man power in the economy, science and technology at the global level and ambitious and could meet the requirements of global competition must be equipped to carry out research and technological studies. In the process of re-conceptualization of education, science and technology developments, re-organization of information and continuity of place and social expectations are rather high. Creative, questioning, critical thinking, researching, learning to learn, communicative, dominated by technology, information friendly society and the environment-sensitive, life-long learning skills will provide individuals with the growth of physical engineering models and the development of educational environments is the basic element of our country (Turkey).

MATERIAL AND METHODS

The physics engineering profile

Applied physics engineering departments other than education and training programs are responsible for making the technological advances pioneered. Fulfillment of this responsibility in the administration of science and technology in general will be for the projects. Contemporary physics engineer, on the one hand while enriching their vocabulary knowledge to be an element of learning and cooperation within the creative structure. I can learn, if necessary in the competition but also ensure that we could be open to cooperation. So, today's and tomorrow's lifelong learning and life-long physics engineer has to be open to communication.
Engineer determines the physical characteristics of our age profile should include:
- Life-long learning based on the potential and dynamism,
- Cooperation in the flexibility of learning by doing in the competition,
- In time and ensure quality management of superiority,
- In general, the acquisition of knowledge and management skills,
- Your professional field, "the implicit knowledge" (tacit knowledge) in the rule,
- Ability to group work in all types of media and condition,
- In today's information and telecommunication technologies and compatibility,
- The different disciplines, different cultures or ones ability to communicate and collaborate,
- Or a very different look at the world in terms of disciplines, the ability to analyze facts,
- Engineering knowledge of social, economic and environmental impacts understand, systematic approach based on the ability to analyze,
- The physical placement of business pursued technology R & D and innovation policy design and management skill.

Universities in Turkey, especially among the physics engineer training in Hacettepe, Ankara and Istanbul Technical University, in recent years, the Anglo-Saxon system, fed by the instructor and the department staff have reached a good level of scientific staff and has its own teaching staff itself has come to grow. At the same time, many years to eliminate the needs of the newly opened university teaching staff have made important contributions. Development and specialization in the economy with qualified man power required by the physics engineer in the field of science and technology at the global level and ambitious and could meet the requirements of global competition must be equipped to carry out research and technological studies. In the process of re-conceptualization of education, science and technology developments, re-organization of information and continuity of place and social expectations are rather high.

Physics from the discipline of engineering as a person, fully equipped with these capabilities is not easy being graps, but all of these capabilities the navy should also think about their own experiences. A new one to them, especially by drawing the bottom of the "social responsibility" which I add. Physics engineer working in a company or self employed, method of production of any product, service or production system, and new or improved products, production tools, systems, methods, services, participating in the process put forward in this way contribute to the creation of an economic benefit be found. Created economic benefits, directly or indirectly as a social benefit that will contribute to the creation. It is more, but there are signs of social responsibility. Physics engineer is the basic element of the process of creating innovations in the production or the purpose of scientific approach, that human happiness, quality of life of individuals, social welfare, raising the consciousness of the community to know that, and it has spread. In this respect, the participation of each stage of the process would work better at assessing what the last analysis. Scientifically, productivity, innovation, and innovation ability should make efforts to use for this purpose. Engineers have played a major role in the progression of the first civilization of modern times. Today's engineers took over, this is the main legacy. This will be the legacy to future generations. One difference; the human and society, is positioned at the focus our attention much more than the past. In fact, our civilization is really a progress saves, it is also necessary to be this way. Awareness of social responsibility, basically being a man in only a profession engineer, human being, the only bridge that will carry I could be enlightened. Evaluated taking into account individual differences in physics engineering education of individuals or the nature of the type of education tend to adopt multi faceted approach is important. However, people skills, learning skills, personality traits and past experiences that the main factors to be taken out in the provision of educational services.

Graduates "engineer" degree programs that assess the quality and standards in these programs to accompany the emergence of the first studies in the world in 1932, the United States of America (USA), now with the "Accreditation Board of Engineering and Technology" of the (ABET) is based on the foundation. ABET, the professional chambers and organizations in USA of engineering in USA as a confederation of independent accreditation of engineering programs, engineering programs outside USA engaged in the assessment of equivalence. In recent years, many countries including in Europe, including Germany, according to the model to create their own national engineering is ABET accreditation organizations, the accreditation of engineering programs by country, showing the wide distribution approaches and faced with important differences. Engineering accreditation in the framework of the European Union, especially with the work, on the one hand, "Accreditation of European Engineering Programmes and Graduates" (EUR-ACE), such projects are working to create a common European accreditation system, on the other hand countries establish their own accreditation systems and these systems will allow mutual recognition of intended to improve the mechanism [1].

Situation Analysis

In our country (Turkey), together with the absence of a specific policy of the national science and technology, higher education institutions due to lack of quality measurement system to present day back to work on productivity analysis at universities has been overlooked. Productivity analysis of the publications cited by these publications, and the on going scientific studies, the administration and operation of residential properties, science and technology projects, the success of students and alumni status, region, and many other criteria must be done with the service. However, measurement of these criteria are necessary for our scheme still could not be established and operational restructuring. Scientific work of our universities is limited only by the total number of publications. Technology R & D priority areas of our country's current number of staff will give you an idea of the thought, "the ISI Web of Science" using keywords chosen from disciplines as designated by "the Web of Science", was addressed publications in journals scanned by Turkey between the years 1998-2008. In all languages published between 1998-2008 and Science Citation Index (SCI), entered Turkey addressed to the publications of these studies has been compiled scanning. Just a thought about the current situation that calls and whether people would like to state the exact number of actual publication, and the investigator.

With a large population of young people in our country to increase the enrollment rate is an important goal, of course, but disposed of the second plan of the importance of the quality of education is even more important here. Especially in terms of technical education, secondary education institutions lack the tools and instruments of modern education and the quality of teachers is not enough. Existing infrastructure is not adequate to meet the needs of higher education, particularly engineering, including physics engineering, education and research laboratories in almost all parts of the very poor. This created the infrastructure of various departments of physics engineering, even if the technology is improved, due to both wear and the need for renewal of laboratories is inevitable. Develop technology capable of physics engineering departments with responsibility for staff development to meet the special project within the framework of the lack of machinery and equipment are required to provide resources to the university [8].

A case of co-operation with the requirements of our lives and work area approaches in education is one of the leading and decisive. Learning is based on the basis of cooperation, the experiences of individuals and business areas, this ability makes it easy to carry. Demographic factors as well as our country these days is reached in 2015 and 2025, will continue to be an important feature, even one in every three people will be under 22 years of age estimation is important in this respect. The sustainability of the young people as a demographic fact that young people with high social mobility will become even more meaning. This young population and new technologies developed in the open, those with a high presence of compatibility is also important [1]. However, the regulation of higher education, the only type of education, weak rings of structural disorder between the university management system, professional development of teaching staff is not supported with quantitative and qualitative deficiencies negativity should not be ignored. Physics, mathematics and engineering science professionals are badly in need. In this respect our country's most important and largest source, no doubt, as will be well trained and well-trained engineers, in 21st century quality of physics, our country's science and technology in meeting these requirements with the requirements of engineers, train them in the engineering faculties of universities and therefore the role will be different than today.

Giving up our country's science and technology, producing technology transfer is very important to go through restructuring. Instead, for the performance, depending on the policies of the central administration develop science and technology should contribute to the mobilization of internal dynamics. Technology transfer as a country moving away from an understanding of information technology producing and proceed to gain a better understanding and planning of the country's resources would be appropriate in this direction. On the other hand, was graduated from the university's own internal dynamics of successful graduates who know better is high on the contributions of the university's academic success should not be ignored. Yet with the full meaning of the information society in our country the distinction of being not formed, knowledge and technology with the task of generating the power and importance of universities in the medium term is unlikely. This is an academician in the process of creating the importance and interest will be selected in a professional situation. Outstanding orientation to academician successful graduates, the increase in direct research and development and education positively affect teaching quality.

As a result of the university entrance examination with physics engineering section of the preferences of engineering students from other parts of the slices according to the percentage is low. Physics engineering section, a numerical weight in the process of education of engineering students on basic mathematics and physics, information intended to inclusion formation. Basic knowledge of physics engineering group that is missing the majority of students are lower levels of success during training. Therefore, the students experienced significant challenges uyumlarında section. So, as we might conclude, scientific and engineering activities are related to each other and integrated in a more comprehensive whole, in which science provides the "know that", the propositional knowledge that engineering activities and thinking need as one of its inputs, and the processes and technologies produced by engineering support scientific activities and provide a rational scientific progress and a possible ground for philosophical reflections with regards to the epistemic stand of scientific theories. According to this perspective, scientific and engineering activities might be related through (positive and negative) feedback and feedforward loops, in order to generate mutual synergies where the whole would be greater than the sum of its parts.

An adequate integration of different non-propositional and propositional knowledge is a necessary condition for an effective practice of the engineering profession. Science and engineering oppose each other in other aspects, but always synergistically, in polar opposition, and not contradicting each other. Scientific thinking, especially in the empirical sciences, for example, mainly (but no uniquely) proceeds from the concrete to the general, from concrete observations to the formulation of general hypothesis and general laws. Engineering thinking proceeds mainly (but not uniquely) from the general to the concrete, from scientific abstractions to concrete designs, artifacts, tools and technologies. In this sense, scientific results are mainly produced by abstract thinking, while engineering products and services also require concrete reasoning in order to concretize, to make real, the designed product or service. Another way to present this kind of opposition between scientific and engineering thinking or reasoning is to notice that while scientific activities are essentially oriented to the necessary, engineering is oriented to the contingent. An adequate integration of "certainty, universality, abstractness and theory" with "wilfulness, particularity, probability, concreteness and practice" is highly desirable if not necessary for both: scientific advancement and engineering increasing capacity in generating goods and services with a continuously growing efficacy (i.e. adequate blend of efficiency and effectiveness). Figure 1 shows the fundamental synergic relationships between science and engineering through mutual positive feedback loops. Regulative feedback loops may also exist via negative feedback and feedforward loops.

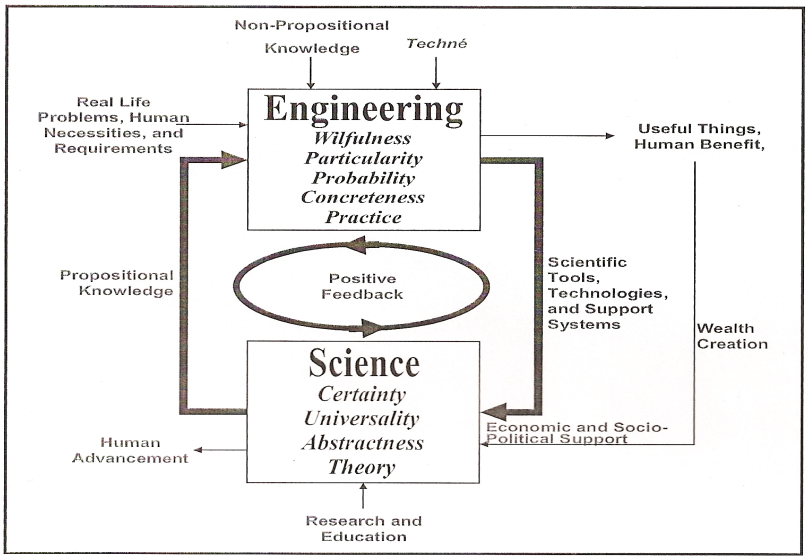

Figure 1. The fundamental synergic relationships between science and engineering.

University-industry collaboration

Universities in the world after the second worldwar period the industry has accelerated the approximation of the project. After the United States of America, Japan and South Korea to develop and use new technology to the fields of engineering by creating the best education and training structure provided the establishment of R & D network, the network side of one side of the industry to put targeted universities. Looking at our country, not based on very old university-industry cooperation, the establishment of Turkish Scientific and Technological Research Council of Turkey (TUBITAK) in 1963 started the implementation of science and technology policies, we see a more systematic. After this date, our country's industrial sector to produce new products and systems, universities are places of knowledge production, research and application centers, techno parks and technology development centers were opened.

Innovation in the changing environment and conditions, the innovation process, the science system (the system of universities and public research institutions) and the business sector is gaining importance due to the interaction between the good functioning of the phenomenon. Networking and collaboration between institutions, it is more important than today. Increased market competition, accelerating changes in science and technology, increasingly, we see institutions more quickly forced

innovation. Organizational changes in the level of companies play a vital role in providing for technological change [2]. Small companies, especially technology-based ones, play a role in developing new technologies and increasing in diffusion. Acquisition of knowledge, innovation is critical to the effectiveness of systems and increasingly interact, multidisciplinary, life-long learning and is based on freedom of movement has become.

Engineering is the development of new knowledge (scientia), new "made things" (techné) and/or new ways of working and doing (praxis) with the purpose of creating new useful products (artifacts) or services. Scientia, techné and praxis are three important dimensions of a comprehensive conception of engineering as a whole (occupation and/or profession) engineering, as scientia, or more specifically as scientia ingenieriae, is mostly developed in academia; as techné is mainly practiced in industry generating technological innovations; and as praxis is carried out mostly in technical and non-technical organizations, supporting managerial activities and technical procedures, via methodical and methodological design and implementation. An engineer might be more oriented toward one of these dimensions, to a combination of two of them, or systemically integrating the three of them. Large engineering organizations and large industrial corporations with internal R & D organization usually work according to the three dimensions. Different individual engineers might be more oriented to one of the three dimensions, but the activities of the organization or the corporation, as a whole, are usually three dimensionally oriented. The more engineering is an occupation or a profession, the nearer it is to the three dimensional plane; the more equilibrated the engineering activities are the more proximate are to the center of the plane; and the more one dimensionally oriented is the engineering activity, the closer it is to one of the three vertices of the three dimensional plane. In general, engineering is supported by three kinds of activities, which are associated to the three mentioned dimensions, which in turn are related to three kinds of knowledge: propositional knowledge, or know-what, which is associated with scientia and/or scientia ingenieriae; procedural knowledge or know-how, which is associated to techné; and tacit/personal knowledge which is associated with praxis (Figure 2).

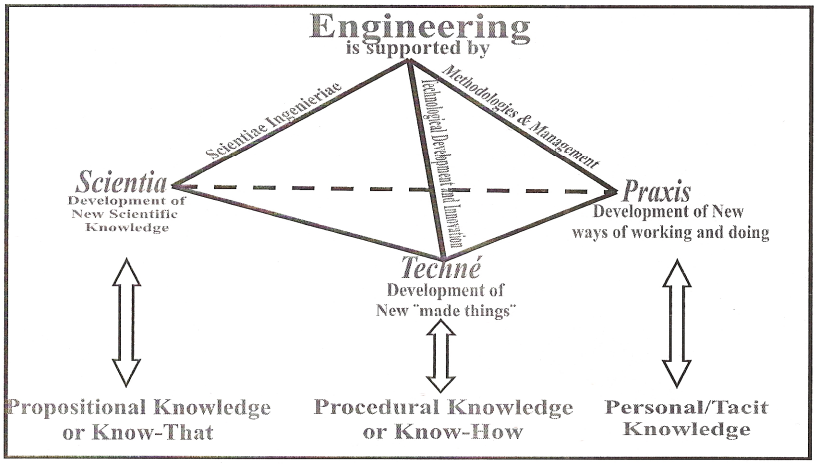

Figure 2. Engineering activities located on the triangular three-dimensional plane.

Engineering processes use propositional knowledge, know-that or scientific knowledge in order to bring about useful products and services, by means of their know-how, their techné, craft or art, through professional praxis. Engineering products require, in turn, of business processes in order to transform its useful products into products actually in use and, hence to transform their useful products and services in wealth creation and human benefit. As it is shown in Figure 3, engineering processes provide two major inputs to industry and business processes in order to transform the three dimensional engineering know-how into technological innovations and usual goods and services. One of these major inputs is related to what might be called traditional engineering, or engineering based in natural science knowledge (beside the required non-propositional knowledge and praxis), and the second major input is associated with what might be named as non-traditional engineering. It is important to notice that engineering relates to industry and business organizations

through complementary and synergistic relationships, via positive feedback loops (Figure 4). There also are though frequently in implicit way mutually regulative control via negative feedback or feed forward.

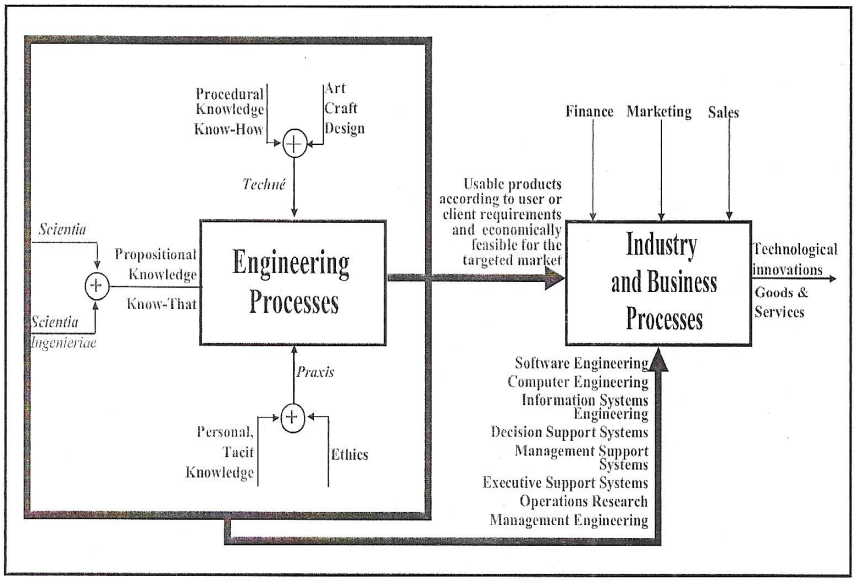

Figure 3. Engineering processes provide two major inputs to industry and business processes.

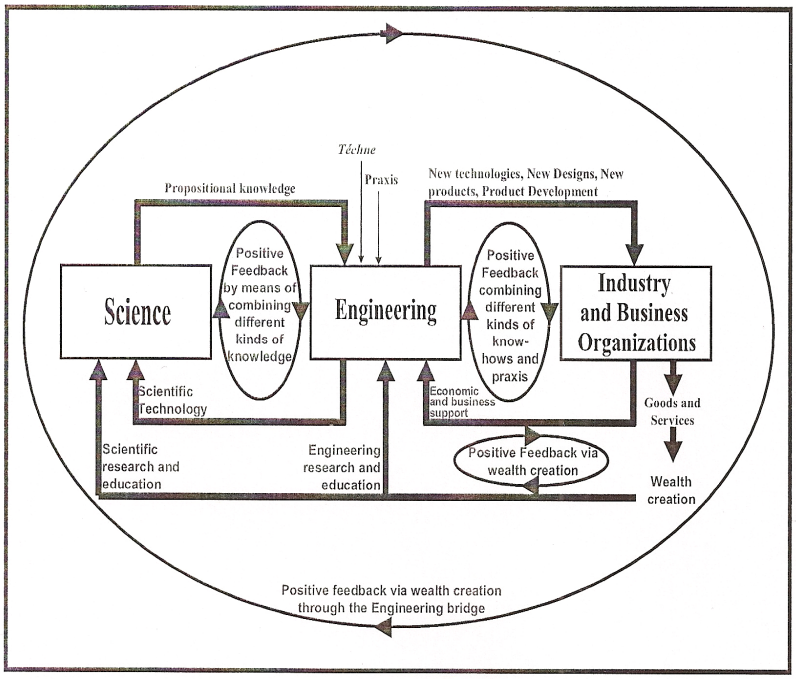

Figure 4. Bridging function of engineering between science and industry.

Figure 4 integrates both mentioned figures indicating the bridging function of engineering between science and industry. Two kinds of feedback loops are shown if Figure 4, totaling 4 main loops. Two loops are based on an adequate combination of different kinds of knowledge. Two other loops are mediated by wealth creation, which results thanks to the engineering function associated to bridging science and industry/business.

University and industry collaboration, universities and industry come together not only the interaction does not occur. State, but the invisible third partner in this cooperation. Thus, the role of universities in innovation studies, visible in an increasingly knowledge-based societies are

determined tripartite partnership. Therefore, universities, companies and institutional arrangements between government agencies or representatives of the network, focuses on re-shaping communication and expectation [9]. First of all, market oriented innovation processes, the country's science system, which can own a solid knowledge base (universities and public research institutions and the basic research, largely supported by public funds) should be based. Public sources of on going scientific studies of health, environment and national security as well as the development of knowledge accumulation also contributes to the overall growth and rise in quality of life. Scientific advances, the main source of technical innovation. Industry, universities and research carried out by public institutions or through joint research, or purchase of patents and licenses, directly or indirectly benefit from the results of this research. Firms in the supply of trained personnel are obliged to rely on the same scientific basis. A growing number of industrial patents, the basic scientific literature on the subject see the show as a source of information [1, 2]. The aim of the most important predictions of the future of technology in the countries held together as it is desirable to shape the attitude of this is to create effective. Looking at the history of developments in technology, some technologies are periodically encountered in almost all economic and social activity is seen to cause revolutionary changes. Study is the most striking example of the Industrial Revolution radically changed the underlying technology of this kind of steam technology. The next stages occur, such as electric and internal combustion engines in some of the technologies used in producing goods and services was made very significant changes. Today's micro-electronic-based information and telecommunication technologies in all areas leading to large-scale changes [2].

Technological developments

Regulation of technology-based education and training of teachers or their contributions to the teaching staff, education on making structural changes in the nature of pre-first conditions sine qua non. On the other hand, the teacher or the teaching staff training and technology-based training, targeted to train qualified human resources, will enable the development of R & D system. In the meantime, the presence of a strong R & D system, both the new and various human resource training, as well as the potential opening of new areas of entrepreneurship is necessary to [1]. Energy production, new and renewable energy sources, especially wind, solar, small power, geothermal and biomass resources utilized to the maximum extent provided by ensuring that all measures and incentives are needed. Renewable energy technologies for the exploitation of resources in the world, is under development and commercial uses of the 21st century is expected to be large increases. These are new areas that are studied, and to enter our country through these technology areas will give you the opportunity to be able to be the owner claims. This allows better evaluation of new and renewable energy fields to create a national technology R & D activities for the organization should be provided for and supported.

Extraordinary advances in science and technology, information set, these two very closer to each other initially, including physics engineering, gene engineering, tissue engineering, nanotechnology, such as science and technology are closely intertwined branches of the new science and technology have emerged. Today, not only in science is intended to advance this progress in the field of technology, science and technology with economic and social benefits intended to be included in the ability to convert. Rapid economic and social benefits of science and technology (marketable new products, new systems, new production methods and new social services) conversion capability, generally defined as the ability of innovation. Recently, in a country, showed progress in the field of science and technology innovation go to the right know, but at that time, able to provide competitive advantage in world markets, global processes and decisions that may be the owner. Effectiveness of a permanent recovery of the technology, imported technology in no time, the country with a solid foundation of science is capable of having a specific substitute for innovation. Emphasis should be given, through learning by doing and learning by searching, "know-how" has been adopted. The country with a solid foundation of science is capable of a particular innovation is the "National Innovation System" is to communicate. "National Innovation Project" in the technological forecasting and foresight activities on a regular basis is important. Thus, the estimation and forecasting exercises periodically to be put out with the curves of life (trajectory) through research and technology, science,

technology and innovation policies, the preparation and effective decisions on issues of uncertainty is high it will be possible [2].

The new global economic developments in information manufacturing a salable product, production or manufacture of sub-structure, local and flexible mass-production concepts within the framework of flexible automation has evolved into a marketing tool. Transition from an industrial society to information society is one of the most important indicators of this change, 21st century knowledge-based society and knowledge-based economy, the continued observed. Today, science and technology talent to win now rather than a state policy is becoming a social project, the implementation of policies and objectives laid down in order to reach all relevant sectors is required to be built on a vision shared [6]. Science; technology and engineering processes sit out role in the changes, but ultimately this or that direction as a country affected by these changes must be at least "be aware of change" need to believe.

The main problem today's information technology audit control problem and it will support the technology; microelectronics, communications/telecommunications, computer and network technologies. Re-formed the base of the network technologies, operating according to the principles of quantum mechanics, molecular and optical computers, information storage and processing with the help of the laser beam changes the energy levels of atoms in the availability of physics engineers has provided. In addition, pushing the limits of semiconductor physics and engineering research, the wave length of light emitted at a smaller size made nanolasers.

Lives very quickly fall into various areas of nanoscience and nanotechnology, in the next 10-15 years will create new markets for products and with great surprise and human life and economic activities will have the power to change radically. The next decade thanks to nanotechnology, supercomputers in years to be see under the microscope, the tissue found in the human body to improve diseased, who operated on the nanorobots, nanomemories strengthening addition to the capacity of the human brain, which prevents pollution of the environment much less than the factories through nanoparticles pollute [8]. Today nanolasers; fiber optic at communication, computers and the early detection of diseases that can create revolutionary nature. Worked on advanced materials technologies:

- Production process efficiency, product quality and raise the technical efficiency,
- To improve the quality of life, and it varied depending on the level rising to meet personal requirements (the need for climate-sensitive textiles and so on.),
- To protect the natural environment or on the use of material consumption meet the requirements of (friction/power losses and so reduce the need for materials.),
- For sustainable production in terms of material consumption or use to create the necessary conditions (material to maximize strength and so on.),
- Meet the requirements for developments in other fields of technology (computers, according to the severity of light for the formation of biomolecules to achieve change, etc.) intended [6].

To defined objectives, functions and qualifications, and is produced in accordance with the process of could design, microstructure/nanostructure depends on the characteristics of high-precision supervised. On the other hand; mechanical, thermal, electrical, magnetic, optical, chemical, and biological functions depend on in terms of superior quality and high technical event. Advanced materials technologies have been the subject of product categories:

- Advanced metallic materials/superalloys,
- Advanced ceramics (engineering ceramics),
- Advanced polymers (engineering polymers),
- Composites (polymer, metal-ceramic mixture, carbon, glass, boron-ceramic fiber combination),
- Superconductors/new semiconductors,
- Optoelectronic materials/optical fibers,
- New biomedical materials.

Advanced materials technologies, materials known to have superior qualities rather than making the existing ones or new ones have a much superior quality and functions include designing potential. It also provides re-formed business process innovation. Material technology sector in terms of materials, provide input to all activities in the economy-based contagious (generic) appears to be one of the

fields. The terms of the nature of the micro-electronics, biotechnology and nanotechnology will take shape along with industrial production is considered one of the main technological areas. Defense, aerospace, micro-electronics, communications and automotive sectors, to use the emergence of advanced materials, materials science to meet these requirements, a multi-disciplinary, process-oriented transformation of the field is moving together. In this context, intelligent and functional materials, optoelectronic materials, such as the areas of advanced materials will occupy an important place in the coming years, our country will be important to all areas of opportunity [8].

RESULTS AND DISCUSSION

Science and technology reached the point today is a result of new studies interdisciplinary. Excretion of the dominant technologies of the future in science and technology to start and people who want to be in Turkey, information, communication infrastructure and to invest in human resources management system, establish a national scale is inevitable. Expanding community of science, in line with the requirements of the future areas of expertise should be accelerated introduction of the community.

All the OECD (Australia, Japan) countries, under the requirement for R & D to investment firms to resolve objections born, the overall benefit of society before considering the commercialization of R & D activities have been supported by public funds. To achieve the purpose of this support, university-industry research collaboration within the innovation system, strengthening the defense of the state, such as health and environmental protection are important to increase R & D activities [10]. Dominated areas of science that supports these technologies of the future technologies and tidy, in hardware requires manpower. This manpower, R & D personnel in the fields of science and technology, science and engineering to work in the industry contacts and technical staff includes trained. Therefore, the education system to train people with these characteristics must be taken into account all the steps. Pre-degree, undergraduate and graduate education programs in the country to be dominated by the needs and the technologies required to support these technologies should be revised taking into account the fields of science. Universities in the academic disciplines of engineering, industrial R & D incentives should be provided with the connection.

Joint training programs for university and industry with the academic life at the intersection points of industrial life. To do this required the creation of necessary infrastructure. Contribute to the development of the country, from universities and industry to transfer knowledge effectively in the industry as the provision of benefits to society are needed. University-industry cooperation for the realization of technopark established universities within their R & D projects needed by industrialists Small and Medium Industry Development Organization (KOSGEB) technology centers, physics engineering department faculty members are supported by. However, the proposal does not come from industrialists adequate studies in this direction has not been the intended level. Given that technological progress played a leading role in physics engineering department faculty members be included in the evaluation of projects is inevitable. Physics engineering departments of universities, fields of study should be determined in accordance with world scientific and technological developments. In this context, the new centers have adequate infrastructure facilities should be established and the effective work of these centers should be provided. In addition, the centers will produce regional-scale solutions to problems in the technological basis established [11].

Allow our country will to make progress in science and technology education and human resources system, quantitative targets can be considered as criteria of success, over 50% removal of pre-primary education enrollment rate, enrollment rate 100% removal of primary and secondary education, higher education enrollment rate of 50% to removal, will be outputs of our education system of diplomas and certificates in foreign countries to ensure recognizable, R & D personnel per thousand of the working population as the OECD average is determined on the removal [1]. Improve physics engineering department, the department and the new graduates attractive job opportunities in making the old and influential positions in the important roles that our graduates are welcome. This situation further improved, more effective communication with alumni of the university administrations on the need to do work. In principle, today, analytic thinking, cultural and equipped, the training of engineers in physics researcher, a universal level of knowledge and technology to

produce, to contribute to regional and national development, ethical understanding, participatory decision-sharing are also provided.

Continuing education centers, education to give people who worked for many years in the industry will be helpful. Thus, a combination of producing and using information to create an integrated structure. Both industrialists and academics and students can learn in this way the new developments in the industry can achieve this by establishing relationships between the events they have learned. Technological assessment and policy making processes of the development of mechanisms for the participation of the majority of society is inevitable. Especially key role in raising the man power capability in science and technology will belong to. This is detected and evaluated in terms of manpower as a key strategic resource. Universities and research institutions, local and foreign industry associations in cooperation with the legal arrangements should be made to allow the creation of the technology development zones. Develop university-industry cooperation, R & D activities of academic staff in the industry and ensure the participation of technoparks the necessary amendments to the law of the Higher Education Institutions will be in place. Industry-university co-ordination, advisory and executive committees, industry studies to count credit courses, graduate studies scholarships given industry, the teaching staff on leave while working in the industry to declare a university with expectations. Criteria for appointment to the universities and the upgrading of industry and community efforts to cooperate with the weight gain, an associate professor of social studies exam regulations and activities for cooperation with industry should be given the space and weight.

CONCLUSION

Institutions and companies in Turkey, keeping in pace with new technologies and new production areas will orientation, we have to put forward measures to create a suitable environment and climate. These measures basically, the country's technological capability and the ability of science to raise the target by the source of this talent will. However, this is not sufficient, but also economic and social benefits of science and technology (a new product, a new system or method of production, a new social service) return along with the ability to increase the targeting, to improve regulations by establishing a national innovation system must contain [12]. Therefore, science-technology-innovation-industry production areas of the country's ability to raise systematically addressed in a holistic national policy space, we have to put forward a national strategy.

Giving up our country's science and technology, producing technology transfer is very important to go through restructuring. University entrance examinations were ranked among the first two thousand students to choose engineering education, an advantage for our country to be converted. Excellence in every first and foremost, this will be the brains of education and training content, is carried by the elements. Of communities to produce knowledge, the ability to convert the economic and social benefits of national economies and community life in a world shaped by again, this transformation of our technological infrastructure for the foot to cope strengthened with the expected profile of physics engineering.

ACKNOWLEDGEMENTS

I would like to thank Professor Dr. Andrew SUCIU (Materials Science and Engineering Division Laser Technology, Politehnica University of Bucharest, Bucharest-Romania) is also gratefully discussed for relationship of science-technology-innovation-industry.

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