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Technical education as a challenge of modern education towards social – civilizational transformation[1]

Introduction

Technical education, present in all education systems in the world, is used to understand a teaching reality through inspiring to know and understand the technology that is surrounding people. Such education gives knowledge which leads to realizing the importance of technology both in human development and the development of culture and civilization in general. Finally, it leads to understanding man in technical situations, both professional and non-professional. (Noga, Pauluk, p. 62–70). There are always opportunities to use the pool of technical accomplishments and building its own personality, also to intensify one's own creativity, and finally to take action for the benefit of others. It inspires creation and development of not only new technologies but also new products to help human being, but also those that are or might be a human threat. Here most fully manifests itself the humanistic aspect of art or humanistic aspect of technical education, through which man is preparing to the creativity of technical actions, but also to seize the opportunities to use technology for the good of human kind.

Technical education as part of general education

Technical education is therefore a necessity resulting from introducing technology into all areas of human life, including culture. This education with the participation of humanities (including pedagogy which determines the impact of educational and socialization of various aspects of technology) determines issues related to education at different stages.

Education both general and technical integrates contents and conditions of both the mental labor and work of human hands, which has crucial importance for the development of the individual.

[1] Referat wygłoszono podczas sesji plenarnej Międzynarodowej Konferencji Devoxx 4Kids 26 września 2015 w Uniwersytecie Pedagogicznym w Krakowie

Today, in the era of an extremely dynamic technological development of technical education both theory and its practical implications are particularly important. Transformation of working conditions, production processes, changes in the job rate and labor productivity, and skills required and migration in search of work, and the preparation of workers by employers, and, above all, mechanization of production processes means that both the people directly involved in the production process, as well as those who are trying to understand this process of change often stand against earlier unknown challenges and opportunities largely resulting from knowledge of the possibilities offered by modern technology.

All of this means that technical education, which is kind of bridge between the natural sciences and technical, as practiced by schools, take on a new special meaning.

This should be realized not only when we wonder how the achievement of science and technology are manifested both in the content of general and technical education, but also in relation to moral education and ethical issues.

Also, the universality of general education, in which subjects such as mathematics, physics, chemistry, biology or finally engineering and computer science play an essential role to, tells us to look for the importance of knowledge related to the impact these items have on education particularly in technical culture.

General technical education is therefore closely linked with other areas of general education. For technical education important is such a skillful determination of the issues of language, literacy schemes and pictograms ability to select appropriate and necessary information, learning the skills of ethical behavior in specific technical situations, and finally learning the skills function in the a particular organizational culture and economics. It teaches being a rational technical consumer of goods, also taking into account the knowledge shaping the ecological awareness of a consumer.

So the development of technology and mathematical and natural sciences, the automation industry and mechanization of production put both before the theory of education and teaching a series of new challenges. The direction of the evolution of theory of education and teaching also depends on the perception of needs and the implementation of technical education.

For some time now, the formulation of the basic theory of technical education talks about overcoming the antinomy between general and technical education. But is this issue not only theoretical in Poland? It is here emphasized that the implementation of technical education in universities of teacher education takes place at technical faculties which currently considered favor points gained for subsequent publications, rather than the possibility of educational and socialization impact of technology (Dziamski, Gogolin 2006).

Still, the mutual connection between general and technical education seems to be a relevant issue. In the era of modernization of vocational education issues of technical education in vocational schools deserve special attention. The question arises: is it implemented in general schools can be automatically transferred to vocational education, and thus will not be minimized functions of education implemented in these types of schools?

General technical education and preparing for the changing labor market

Mainstreaming technical content in general education is also a correlation between the content of science and natural sciences with technical content. To a certain degree this is also the technical content of academic subjects, in this case at a theoretical level. This allows you to show young people the technical aspects of mathematics and natural sciences issues, to show laws of mathematical, physical, chemical or biological part in relation to technical issues, which might change the attitude of students to the world of nature and art, and even to some extent prepare them for the future occupation.

Indeed integral education, taking into account also technical issues, also allows for a certain level of knowledge on the choice of future profession, but also builds awareness of the impossibility to undertake in the future specific work for instance due to certain health conditions, allergies, imbalances, etc.

It seems therefore that humanization of technical education is necessary and learning should not just boil down to issues related to information technology contents, the secondary schools should not ignore the content of technical education.

There is no doubt that if we are raising the need for technical education, we have in mind also its practical side, and therefore also everything that is related to the manual labor, the use of simple machines and mechanisms, and ability to use basic tools. These are also issues related to the practical knowledge of technology, paper, wood, metal, plastic, glass, etc. It is also an excellent opportunity to show students various jobs, workshop documentation, safety regulations, but also, if necessary, pay attention to various health requirements for certain jobs. This issue is most often completely overlooked in today's professional counseling. Values of that type of learning activities are sometimes often neglected or are discontinued for many reasons, including the availability of finished products.

Of course this is one of the reasons for the lack of comprehension of technical education, which can be accompanied the production of certain creations, often with an earlier project preparation and technical documentation. In some cases, Polish scientists try to analyze accurately this state of affairs and specify its causes. For example W. Furmanek sees these reasons on the one hand in contempt for manual labor, which is often seen as something worse, on the other hand – in anachronistic educational solutions still functioning in some schools, despite rapidly growing technology. Especially so when we talk about technical education and technical and information technology should be emphasized that we can not treat these areas in terms of obsolete education. (Furmanek 2007, p.)

No less important is also to formulate views on the technical education through the prism of one's own experiences of school, or views, that in case of humanistic faculties, for example, in high schools, technical education is not necessary. But no area of human activity affects the quality and character of human life as technique does. Then there are also often infantile instructional solutions affecting both content and for example tools or machining. This causes the discrepancy between a person in school and that outside it. According to Prof. Carts, although the technique is being created by few, therefrom it is used by many. Technique is omnipresent, changing the style and the quality of human life it affects all spheres of human life activities, affects the possibility of choices, and finally human behavior. It covers the material world,

intervenes in the natural world, and even the biological functioning of the man himself. Technique being at the service of science breaks cognitive and behavioral abilities of humans. At the same time modern technology actually has no resemblance to techniques from years past. A person functioning in the world of technology from childhood starts to perceive, understand and work through the prism of this technology and the opportunities it offers. Therefore, basic knowledge, skills and attitudes related to technology education should be a component of every human being.

Technical education as an integral part of education and civilization changes

Civilization changes transition from the industrial society to an information society implies the necessity of another preparation in the education system to prepare adequately to the changing labor market. Among other things, the need to learn ICT arises. There are issues of teleology in education in the context of human functioning in human culture and technology. It seems that only the anthropocentric view of humans and technology will help prepare a person to a specific rational behavior, including often unplanned unpredictable technical situations.

Technological developments and their impact on the quality of all spheres of life makes knowledge of technical issues imperative, it is necessary to comprehensive pedagogical activities in the field of technical education, providing significant technical expertise for specific technical situations. Only such education will allow to understand technical situations worthy of man. A multidisciplinary technical content selection allows recognition, understanding and the right attitude towards the rich axiologically of technical situations.

The individualization for Vocational Education technically allows the self-development of pupils, who through their own participation in the technique develop certain features, discover their talents and passions by making certain the technological products – even necessarily complicated, but possible in the context of mental and physical development, strengthens the sense of its value, a culture of support. Professor Furmanek, repeatedly pointed out that technical education should be a path to the world of human values which lies at the heart of authentic good of students and the modern model of technical education. Internalization values will make it possible to set reasonable behavior, including technical situations.

Such perception of technology and its functions affects the material reality of the world around us, it is an integral component of our civilization. It also influenced the development of culture. The ability to understand and creative functioning is possible after all, also thanks to the possession of specific technical culture that allows to rediscover this reality yourself and recognize technology as a realization and a chance to meet particular needs. The universality of various technical devices implies that the development of technical culture, which is also a component of general education of children and adolescents. Technique and production can be seen in the context of the needs and benefit of man.

Humanistic dimension of techniques is associated with understanding it as a product of the mind and human hands. This area always concerns personal experiences of a man who thanks to technology and its possibilities wants to multiply the good, facilitate the operation, use technology as a tool for interaction (eg. In teaching

and learning), or only infantile wishes to fulfill your hedonistic-utilitarian needs. This multi-dimensional perception of techniques entails the interdisciplinary nature of modern scientific actions, including those related to technology, which makes the achievements in this area are most commonly the results of actions.

Therefore, technology is an important element of the social environment which determines the level of education of modern man, which is why at every stage of education there is need for such education, which will help understand the fundamental technical processes. Such an education that will prepare for a creative, conceptual intellectual work, analysis, synthesis, and widely understood creative activity tailored to the student's age and the type of school.

Summary

The rapid transformation of civilization and culture entered a path to the information society and makes the need for modern technical education more fully recognized. This is because the technique in large part allows the modern man to find himself in the changing labor market, thanks to the creativity, mobility, perception of the needs of lifelong learning and, above all, the ability to create and use knowledge and advances in science and technology. Good education reacts to the challenges of modern civilization and can help one find himself at the modern labor market and prevent exclusion. Only such education will give the opportunity to know and understand each other, give a chance to discover their dreams and possibility of proper preparation for further educational and career choices. Therefore, modern education takes into account civilization transformation and the presence of modern technology, which has been present in all environments of human life.

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Rocznik Pedagogiczny, 2013, 35.

Abstract

Technological progress and changes in the labor market are the elements that indicate cultural progress of a society. The study shows that the technical progress and related to it scientific knowledge should be an integral component of general education. It highlights the need for technical education as a component of general education.

Key words: technical education, labor market, general education, civilization transformation

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