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The problems of humanising technological education

Abstract: It is contended that technological education, forming the outlook of the modern--day person should accord to universal human values (the good, love, harmony, aesthetics, etc.). The achievements of scientific and technological advance should be subordinate to these values. It is argued that humanising the training of technology teachers requires a strategy and the establishment of regular courses in culture for technology teachers. It is suggested that humanising the paradigm of education changes the basic requirements of the dialectical method in revealing the contradictions of the object of study. Key ideas of pedagogy focus onthe uniqueness of each student and take into account her/his interests and values. This may require individualising the learning process. The abovementioned issues can be responded to through a cultural approach to technology teachers' training. The content of courses should recognise the integrity of the cultural experience of humanity: ethical, religious, philosophical, aesthetic, technical, professional, etc., in addition to the scientific way of knowing the world. The use of technology in everyday life has greatly increased. There has been a shift of cultural patterns from the realm of mass consciousness and mass behaviour that operate on a natural basis to new patterns characterised by individualisation, analysis, and even consciousness transformation and construction. Therefore, teaching that the technological culture of self-determination is culturally determined must be included in the cultural training of technologyteachers.

Keywords: pedagogy, didactics, technological education, humanising, cultural studies.

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Problem statement

The current crisis situation ofsome post-communist societies requires changing priorities in education in order to imbue people with a new type of ideology. This ideology would fosteran individual's harmonious interaction with nature and with other people[1], and would prepare such an individual toaccept global changes, respond adequately to the emergence of new knowledge and help him/her to orienthim/herself in the information space of today and in the future.[2]

An analysis of the current state of general educationin post-socialist countries has shown that one of the main reasons for the crisis in technological education is the existence of two contradicting paradigms in the formation of a modern person's ideology: scientifically-technocratic and humanist.[3]

In developed countries, these two paradigms complement each other informing the ideology of a modern person.

Therefore, the problem of analysing and developing the humanist paradigm of a modern individual's ideology in post-socialist countries is urgent, particularly in Ukraine.

Analysis of recent research and publications

The scientifically-technocratic paradigm refersto viewing society's future as being based on scientific and technological advance. Training in this paradigm leads to the formation of a technocratic type of personality.

The humanist paradigm privileges universal values (the good, love, harmony, aesthetics, etc.) as the basis for the ideological system of society. Science and technology aresubordinated to the ideas of humanism.[4]

Unfortunately, this controversy has not been overcome in Ukraine, and the education system continues to prepare future technology teachers within the scientific--technocratic paradigm.[5]

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[1] National Center for Education Statistics, *Yelektronniy resurs*, http://nces.ed.gov/programs/digest/d07/tables/dt07_005.asp.

[2] P. Belanzhe, *Obrazovaniye vzroslykh v promyshlennorazvitykh stranakh*, „Perspektivy: Voprosy obrazovaniya", UNESCO, 1992, № 4, p. 13–32

[3] S. Lutayv, *Filosofiya suchastnoyi osvity – Navchal' Nyyposibnyk*, Tsentr „Mahistr-S" Tvorchoyi spilky vchytel, 1996.

[4] V. Sidorenko, J. Kulyk, I. Zhernoklieiev, *Updating Technology in the Comprehensive Schools of Ukraine. Technology Education in New Perspectives*, Stockholm Institute of Education Press, Stockholm 2005, pp. 97–102.

[5] V. Kulykye, *Pidhotovka maybutnikh vchyteliv do doslidnyts'koyi diyal'nosti*, Kyyiv–Drohobych 2004.

Thus, analysis of the information field of knowledge (the knowledge that a future technology teacher must possess, according to the typical curriculum) shows a significant bias favouring technical disciplines over the humanities.[6]

Analysis of the qualification characteristics of future technology teachers shows that in terms of «skills and abilities» there is a bias in favour of skills and abilities aimed at forming a technocratic person.[7]

At the same time, analysis of consumer goods (the final products of technological training), in which various technologies are integrated (for example, electronic equipment and automobiles) and which are manufactured in Ukraine, USA, Germany, Japan let us distinguish certain regularities in terms of price, quality, convenience and safety of operation, ergonomics, aesthetics, maintainability and utilisation.

Thoroughness and precision dominates in Japanese products, precision and rationalism – in German products, simplicity, maximum comfort and quality prevails in USA products. That mentality of the citizenry (which essentially depends on education) is clearly reflected in the final product through its characteristic features.

Highlighting previously unresolved parts of a general problem

An analysis of the curriculum and textbooks of these countries shows that significant attention is paid to more human-orientated knowledge.[8] These are: ergonomics, design, culture of production, scientific organisation of labour, ecology. That is, the structure of professional knowledge, which has a significant human component, fosters the formation not of a technocrat, but a humanist.

A humanist personality gives preference to humanistareas of development in her/his professional activity, in making decisions (choice of technologies, choice of work, choice of means of labour, waste management, and choice of safety equipment). So, if we focus on world standards of living, we need to foster the humanist educational paradigm in Ukraine (in the technology field).

The purpose of this article is to analyse the problems of humanising technological teachers' education.

Presentation of the main research material

Humanising the paradigm of education changes the basic requirements of the dialectical method in revealing the contradictions of the research object. The main contradictions that emerged from the contradictions of society for pedagogy in the past were: the contradiction between the needs of people and the conditions for their

[6] *Ibidem.*
[7] *Ibidem.*
[8] *Ibidem.*

satisfaction, betweennormativity and creativity, between the typical training of teachers and the individual and creative nature of their activities. Nowadays, philosophers of education define the main contradiction of the pedagogical process as the ratio between satisfaction of social needs (what is the common "need") and the individual needs, the interests of separate students (what does a separate student "want").[9]

Modern philosophers see the principle of solving this problem as the essence of a new educational paradigm. An analysis of the literature has shown that developing a new type of ideology, which ensuresharmony in society and with nature, requires significant changes in the assessment of science, its characteristics, and its main tasks.[10] This idea was first expressed by the philosopher Vladimir Solovyov (so-called "unification theory"). His followers K.E. Tsiolkovsky, A.L. Chizhevsky, V.V. Vernadsky, and others, saw a new type of philosophy of education as interconnecting living and inanimate nature, the scientific study of nature and matter. And they called for the development of human ideology on the basis of the so-called new *noosphere* type of civilisation.

The use of the unification concept, while forming the methodological principles of systematising technological training content, will significantly eliminate the separation from values in our education, which has developed historically, based on philosophical and materialist principles. This concept must necessarily be used in the development of such areas of technological training as energy saving, maintainability, utilisation of waste products, which is determined by the culture of production, exploitation, consumption of both means of production and production facilities.

An analysis of the science literature showed that this great idea has not been fully implemented and has not led to technological learning out of a crisis, since the amount of knowledge that mankind possesses is not enough to cross the boundary on which the new paradigm begins. I mean the paradigm mentioned by T. Kuhn in *The Structure of Scientific Revolutions*.[11]

The modern transformation of the purpose of educational activity leads to a change in the tasks of education. The priority ideas of pedagogy are becoming theories aimed at studying the uniqueness of each student, taking into account his/her interests and value systems, which requires an individualised learning process. This, in turn, causes the rapid pace of development of knowledge of the previous paradigm.

Knowledge of a new paradigm often lags behind the development of science and technology, their unification reduces the dynamics of knowledge development. Regarding the training of future technology teachers, this problem is compounded by the fragmentation of the fundamental scientific knowledge in their technological training. Certain subjects such as heat engineering, mechanics, electrical engineering, materials science do not create "synthetic knowledge" (according to I. Prygozhin).

[9] S. Lutayv, *op.cit.*

[10] *Ibidem.*

[11] T. Kuhn, *The Structure of Scientific Revolutions*, Publishing AST, 2001.

It is possible to solve the above-mentioned problemspartly byadopting a cultural approach to teachers' training, that is, the content of the training should be the cover the cultural experience of mankind: ethical, religious, philosophical, aesthetic, technical, professional, etc., in addition to the scientific cognition of the world.

The culture-and-value reorientation of human beings and life should take place. And it must be realised in concrete social mechanisms of people's life orientation. Accordingly, training should focuson developing the personal potential of the learner. Culture does not act as an external illustration, but as a model of human existence.

Therefore, educational processes should not be based on a system of ready-made knowledge transfer, but on a system of learners independently acquiring knowledge, in the context of the formation of cultural values, ways of activity.

The peculiarities of socio-cultural processes in Ukraine determine the value--orientation and pedagogical and technological specificity of implementing the cultural paradigm in the training of technology teachers in the national school, but not its general civilization content. That is why teachers' preparation for professional activity requires an analysis of the current socio-cultural situation, the socio-philosophical justification of the parameters of the cultural approach for determining the content of training. At the same time, this analysis should take place in the context of the influence of general civilizational trends within the cultural and national environment of Ukrainian society.

Implementing the cultural approach in this regard is especially important in the process of professional training. During this process the value orientations of the younger generation are being set and the motivational basis for the solution of socio--economic problems is being formed. It determines the forms of activity of members of Ukrainian society in the 21st century, including state building.

Unlike a traditional society, which is based on the processes of reproduction of activity, social structures, life rules and traditions, the modern dynamic society is characterised by processes of qualitative change of various social and cultural structures, as well as the correspondent forms of behaviour, thinking and consciousness of people. Assessment of the future changes accordingly. The future is a process of continuing the past in traditional society. In a dynamic society, the future is fundamentally different from the past; it must be redefined every time on the basis of newly created cultural values. In this case, the problem of the formation of a system of cultural values and motivation of each individual becomes very topical. That, in turn, actualises the cultural approach in the formulation of technology teachers' training.

After all, if earlier the life of society and the individual was determined by externally existing cultural patterns of behaviour and consciousness (mentality), then now the process of self-determination, self-identification, personal development of individual landmarks, ways of life, meaning of life and moral imperatives becomes more important. Nowadays, there is a fundamental change in the method of communication between those working in the technological sphere and those in culture. The exploitation

of culture, the culture of consumption, the culture of using devices and products of production is growing. In traditional society, when technologies were quite primitive, the consumption of products occurred according to standards, cultural patterns. And the impact of technological culture provided for stability in social life. That is, culture, as a phenomenon was not distinguished as a separate social reality.

Within an information society implementing information technologies, the influence of the use of technology in the everyday life of individuals is increasing. Mass consciousness and mass behaviour operating on a natural basis has been replaced by individualisation, analysis and even conscious transformation and design. Learning activities should take place in the context of cultural values and help students pursue their life choices independently and constructively.

This approach brings forward new requirements for the system of future technology teachers training. In addition to the classical knowledge paradigm, which is focused on translating past culture, the goal of vocational training should include the problems of an individual's preparation for life in a constantly changing social environment through developing universal cultural-constructive abilities such as thinking, understanding, reflection, creativity, communicability, etc. That is, the competency approach becomes the key in professional personality formation. Transition to the information society forces us to reconsider the main paradigm of the training of future technology teachers from the transfer of well-known knowledge from generation to generation to the development of the ability to obtain information independently, to generate new knowledge independently, including the methods of receiving them; while perceiving them in the context of sociocultural, sense-of-life meaning that connects cognition with value orientations of the person in a social environment.

At the same time we have to take into account that the formation of technological culture should not be the ultimate goal of cognition, but it has to be a means that provides a deeper and more critical understanding of the current socio-cultural situation, as well as developing projects aimed at improving the various spheres of human life.

In this context, social actions becomethe criterion of value of a (wo)man (as capital), rather than the social status of the individual and, accordingly, society changes on the basis of the goals which are set and implemented by members of society. That is, if earlier technological education corresponded to the generalised demands of society as "scientifically substantiated objective necessity" then modern technological education should respond to the desire of an individual to be self-fulfilled.

Thus, in the context of modern social changes the understanding of the very phenomenon of culture changes. At the base of its structure is not so much a system of knowledge, as the way in which people seek and re-structure different information within the framework of value self-determination. Therefore, in the context of the cultural training of future technology teachers, the technological culture of self-determination in its own being as a culturally determined rationalisation must formulate the content of the corresponding professional training.

One of the most important system-forming elements in the structure of the cultural training of future technology teachers is the ethical dimension of the human beingin the world. First of all, it is connected with a sharp growth of the potential responsibility of each person for his/her activity in the 21st century, with a sharp increase in the possibilities of an individual to influence the direction and the content of social and cultural processes. The level of destructive impact by mankind on nature has reached an unprecedented scale, and the social environment of human existence is also being destroyed. This makes humanity rethink our relationship with the natural and social environment. The result of this rethinking is the *noosphere* approach, which fosters the consideration and regulation of planetary problems, in which human beings will consolidate a set of processes in the natural, social and technical world into a single whole. The role and significance of interpersonal communication is increasing in terms of the progressive interdependence of people, and the morality of another person becomes a condition of my freedom and life's success. The ethics of non-violence is being formed as a principle of survival not at the expense of other people, but due to mutually beneficial cooperation. However, again, we should keep in mind that the ethical dimension of human activity is possible only on the basis of the implementation of a cultural approach to the organisation of all social life as a criterion basis of social values.

Therefore, the new humanist paradigm for future technology teachers' training involves the introduction of such subjects as ergonomics, design, production culture, consumption culture, waste management culture into the educational process. It is necessary to carry out the development of new technologies, devices, tools, materials on this basis.

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