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PROBLEMS OF FORMATION OF TECHNOLOGICAL EDUCATION AT THE PRESENT STAGE OF DEVELOPMENT

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Abstract

Previously, the teacher proceeded from the fact that the teenager transferred knowledge will be faithful companions throughout the life of the disciple. The article cites the need to change the goals of technological education the school, which, in general terms, is interpreted as "ways of acquiring knowledge and rules of operation". The authors start from such characteristics of social- economic situation in Russia: serious demand of individualism as a necessary element for the successful development of a market economy in the country; a variety of possible developments in all spheres of public and private life; the "deification" of rationality and Economics; adaptability of life in all the diversity of this concept. The results of studies show that in terms of technological education, special attention must be given to the following key skills: the formation of the reflexive worldview, understanding the changing nature of the information and remaining open to new data; the analysis of the role of new social and cultural ideas in the interpretation of information and dissemination of knowledge; a willingness to work with conflicting information, the development of skills to reason and discuss in order to reach agreement; assess the credibility of sources of information; developing the skills of analysis and synthesis the facts on which the information based.

Keywords: Technology education, goals of education, work with information.

1. Introduction

The authors reflect on the present stage of technological education, which, in general terms, is interpreted as: "ways of acquiring knowledge and rules of operation".

In the past, the goal that put the people in front of the education was to teach children something, to give him the accumulated by previous generations experience of the material, cultural and spiritual life. Previously, the teacher proceeded from the fact that the teenager transferred knowledge will be faithful companions throughout the life of the disciple (Andade, Esteves, & Neto, 2009).

And what is about today? It is necessary to look on reality around us. Modern social-economic (but not social-political) situation in Russia is characterized by: serious demand of individualism as a necessary element for the successful development of a market economy in the country. Young people are less and less bound by traditions, families, groups, academic or professional; a variety of possible developments in all spheres of public and private life. There is an almost infinite variety of occupations that require a young man of various skills, competencies, level of education, a growing number of specializations. Presently, the educational organization has to prepare students for a fleeting economic and social change, the professions, absent at classifiers and reality, to use technologies that haven't been invented yet; the "deification" of rationality and Economics: the rule of law, logic, calculation, reason, science, secularization, the desire for primarily objectivity, effectiveness, economic. Finance and consumption, is now the dominant motives of human activity (in the traditional society was dominated by such motives as the family, religion, magic, social (clan-based) interests, etc.) (Shishov, 2016); adaptability of life in all the diversity of this concept. Change the tastes and manners, customs and morality, artistic styles, dominated by "mass culture", have multiplied the forms of leisure, changing forms of family life. The most important resources of the modern world, intelligence and finance deny geographical boundaries and can be easily moved in the virtual space. This leads to a rapid growth of obsolete professions and the increase of communication speed (UNESCO, 2008).

The paradox is that the easiest way a young person can learn just the skills and competencies that are also the easiest to digitize, automate and outsource (Manyika, et al., 2013; Autor & Price, 2013; Toure, 2009; Robinson & Latchem, 2003).

All this inevitably affects the nature of technological education, and requires understanding its goals at the present stage.

2. Problem Statement

In the past, the main goal was to teach children and give them the experience gained by the previous generation. The teacher proceeded from the fact that the knowledge transferred to the teenager will be faithful companion throughout one's life. Now, young people are less and less bound by traditions, families, groups. There is a huge variety of knowledge: different skills, competencies, level of education, a growing number of specializations. Therefore, the educational organization should prepare students for changes in the social, economic and professional fields.

3. Research Questions

Question 1: What core disciplines should be included in an educational program?

Question 2: Which key skills should be given attention in scope of technological education?

4. Purpose of the Study

The main goal of the study is to conduct a survey to determine which key skills should be given attention and what should be included in a modern educational program.

5. Research Methods

The empirical base of the research was the survey conducted in January-February, 2017. The general totality of the research are the students of 9 - 11 grades 342 people, their parents – 303 people, teachers of secondary schools – 145 employees, employers – 34. This community is considered as a homogeneous population, represented on the basis of "involvement of the respondent in the activity for the definition of the goals of modern technological education for an adequate choice of the future profession of the young man." The study used a systematic probability sample. From the 824 participants of the experiment in two Russian regions (Moscow region and Moscow) were selected 163 people for interviewing. With homogeneous general population probability systematic sampling gave equal opportunity to every member to become a respondent. Sampling error amounted to 1.5 points with 90% probability.

The object of research is social group of people motivated by an understanding of the goals of technological education at the present stage for an adequate choice of future profession by young man. The study focused on the motivation and possible models for goals of technological education at school formation.

We used the following methods of data collection: formal interview questionnaire (163 persons), observation of experts in the process of communication with respondents (22 people).

6. Findings

6.1. Analysis of the results

Speaking about the disadvantages of technology education in the school at the present stage, the respondents note the following: modern technology and materials far ahead of existing content, the students (pupils – 54%, parents – 58%, teachers of general education schools – 25%, employers – 64 %); insufficient level of technology and culture students reflected on the effectiveness of their training in the colleges, universities (students – no answers, the parents of 32 percent, the teachers of General education schools – 14%, employers – 58 %); modern requirements of "knowledge economy" to knowledge, competencies of graduates of the school were not reflected in the existing educational program (students – 62%, parents 54%, secondary schools – 28%, employers – 75 %); insufficient level of training of teachers of technology for solving contemporary problems of the post-industrial stage of development of the

country (schoolchildren 32%, parents – 45%, teachers of comprehensive schools – 18%, employers – 56 %).

The main challenges of implementing technology education in schools experts regard the following: insufficient material-technical equipment of schools (62%), low level of preparation of teachers of technological education (54%), lack of ability to attract for teaching technology professionals (engineers, professors, etc.), organization of practices and internships in production and training and production sites (incl. industrial parks, innovation agencies), excursions as a component of technological training (31%), outdated contents of school training (56%), lack of attention of the school administration and regional education authorities to the technological training of schoolchildren (38%), inadequate integration of the content of technological education with "theoretical" subjects (mathematics, physics, chemistry, biology, etc) (43%).

Experts state that technological education at school must be implemented by means of: classroom technology, extracurricular activities and further education technical and technological orientation (64%); integration of school subjects, based on the design, engineering and research activities (58%).

Respondents mean important the formation of technological culture in the following areas: work culture (43%), and graphic culture (24%), design culture (56%), information culture (45%), domestic culture (34%), consumer culture (56%), enterprising culture (67%), the culture of human relations (84%), ecological culture (89%), project culture (65%), which together reflect the whole range of the studied technologies (Leach, et al., 2004).

Among the personal results of development of technological education the respondents identified qualities such as systems thinking (67%), technical ability and artistic creativity (56%), the responsibility for the results of their work (59%), workability (45%), skill of project activities (62%), enterprising skills (64%).

Agreeing with experts, it can be concluded that the priorities of technological education today line up in the logic of the formation of the active, initiative and enterprising personality, ready to work in conditions of modern high-tech environment.

According to experts, a framework for the integration of scientific knowledge within the technology education should be sought in practical activities, primarily through studying the development of skills and construction skills (82%), design (74%), modeling (77%), research (68%), experimentation (41%), and data processing information (52%).

6.2. Discussion of the results

Obviously, respondents in their majority understand that the society for which was created functioning educational system, collapses, and rising from its bowels modern socio-technological device seems ephemeral due to the galloping transformation technology not only in technical field but also in social.

The results of the study led us to the proposal on the allocation of the following "substantive lines" of technological education in schools: working with the scientific and technical information and technological documentation, technological processes and systems, design and simulation, design, family

(domestic) economy, technological entrepreneurship, methods of creative problem solving, materials processing technologies, technologies of production and use of energy, robotics.

We see that today there are machines that are controlled by computers; the restaurants are already starting to take orders by robots and computers. There is a lag of education from a sharp jump in technology. If education lags from technological progress, the population does not have sufficient skills for effective professional activity and socialization (Leach, et al., 2004). Thus, discomfort experienced as individuals and society as a whole — unemployment, underemployment, differences in income, personal stress and social unrest.

7. Conclusion

The authors believe that the educational program should include modern disciplines, such as robotics, entrepreneurship, programming and media communications, and yet the foundation remains the traditional subjects: mathematics, literature, languages.

In addition, in terms of technological education, special attention must be given to the following key skills: the formation of the reflexive worldview, understanding the changing nature of the information and remaining open to new data; the analysis of the role of new social and cultural ideas in the interpretation of information and dissemination of knowledge; a willingness to work with conflicting information, the development of a culture of reasoning and discussion to achieve consent; assessment of the reliability of sources of disseminating information; development of skills of analysis and synthesis of the facts relied upon by the information.

In a technological society, with its unprecedented growth in the amount of information the basic skills of working with her become more and more important for students, no matter what specialty they will choose for their professional activities.

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