TEACHER OF TECHNOLOGY AND COMPUTER SCIENCE – EDUCATION IN ADVANCED STUDIES

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Abstract

General technology education is the important part of general knowledge education. Only good prepared teachers can deliver it. Introduction of two-level studies during which students have such subjects as: technology, computer science and education should be favorable to it.

Keywords: education, technology and computer science education

1. Introduction

Transformation of polish system of education which followed the economic and social transformation as well as aspirations to keep up with the civilization and cultural changes in the world have generated the need of new insight into the issue of teachers' education and skill upgrading. The issue is linked with life-long education, which is the subject of many debates and documents published by UNESCO and European Union. The most significant are the E.Faur's paper, Roman Report, White Paper on teacher education and training, Report under guidance of J. Delors and F. Mayor. This process is of great importance when introducing two -level studies. The changes in the approach to professional preparation of teachers of technology and computer science were in the recent years introduced by "Ordinance of Ministry of Education and Sport from 20th May 2003 on transformation of specialization "Technical Education" into the new specialization "Technology and Computer Science Education". [13]. Technology and computer science education in comparison with the former aims at creating the new quality in education of teachers of technology and computer science. It should also have positive impact on increasing the interests of candidates in this specialization [2,14].
Such transformation is a result of the right idea, which assumes, that educational reforms always force the necessity to transform teachers' education in the scope of form and contents of curricula. Forming this specialization is also a try to bring the education closer to new demands, that contemporary civilization brings, keeping the education up with the standards in developed countries, where awareness of information technology among society is widespread and the general technical knowledge people have - appreciated.

2. Standard of education on „technology and computer science"specialization

Studies on "technology and computer science" specialization finish with conferring a title of "bachelor of science" or "engineer".
Bachelor degree studies last no more than 6 terms. Teaching hours should amount at least to 2100, the amount of ECTS points - at least 180. Engineer degree studies last 7 terms at least. Amount of teaching hours should exceed 2400 and amount of ECTS points should be not less than 210. After graduating the specialization of teaching, graduates are prepared to teaching activity. Graduating the first degree studies qualifies for taking up second degree studies. The latter lasts 4 terms at least and finishes with conferring a job title of "master of science". Amount of teaching hours shouldn't be lower

than 1000 and amount of ECTS points should amount to 120. Engineer degree graduates study 3 terms at least, while amount of teaching hours is 900, amount of ECTS points-90.

Bachelor degree graduates can teach technology and computer science in primary and grammar schools. They have also qualifications to serve and administer school computer systems as well as computer systems in small and medium-sized enterprises, educational, local and national governments.
Second degree studies graduates can find jobs as a teacher of technology and computer science in primary, grammar as well as post-grammar schools. Moreover they are prepared to work in design offices, consultancy, institutions that operate computer systems, industrial enterprises as well as in small and medium-sized companies. As engineers they have qualifications to creative work and to manage human resources in different industrial, administrative and scientific branches.
Studies on "technology and computer science "specialization are interdisciplinary in its character as the content of curricula comprises humanities and science.

3. Teacher of technology and computer science tasks

General technology education should be important part of general education. Technology appeared and still appears in home, school as well as professional environment. It determines the development of many disciplines of science, facilitates learning and working, but also influence the development of individual and society.
Curricula, contents, forms and methods of teaching activities, studies and activities optimizing learning process on "technology and computer science" specialization are the subjects of many publications, monographies and materials from conferences of such academic centres as: Bydgoszcz Academy, Radom University of Technology, Opole University, Rzeszów University, Szczecin University and Zielona Góra University. University graduates should have knowledge on applied information technologies, but they should be able to deliver it to students competently in the first place. The technical education system itself should take into account such structure of lessons, which enables using the different forms of technical activities constraining the participation in the world of values. [5].
Technical education is intended and purposely organized type of pedagogical activity, whose main attribute is to make use of technology in the processes of influencing the individual, making changes in her/his personality and shaping the technical culture, determining correct and free participation in the world filled with technology. [4,7].
In the recent years one can observe the aspiration for creating such teaching model, that would shape student's ability to think creatively by use of the latest achievements of technology. Shaping future participants of information society entailed many changes in teaching-learning process. One of the aspect of the changes in education is introducing modern technical solutions [8,9].
To raise effectiveness teachers have to extend continuously their computer knowledge in the extent necessary to skillfully usage of this knowledge in didactic process. Active teachers can extend and complete this knowledge through participation in postgraduate studies.
One of the teacher's tasks is to motivate students to activity. Teacher should know well students' aspirations and ambitions. It is necessary for teacher to know the environment students comes from, parents' economic status, cultural and religious traditions etc.

Knowing students, their resources of previous experience and interests facilitates selection of tasks difficulty level for all of the class or for the group of students.
Apart from important tasks teachers struggle with problems. They result from necessity to organize certain conditions e.g. workshops equipped with technical appliances, tools and materials necessary to practical activities. Difficult economic situation of schools make the subject inconvenient due to its cost consumption.
Difficulties in implementation of general technical education assumptions result from the low amount of teaching hours designed for technology in the primary as well as in the grammar school.
How should future teachers be being prepared to do their job? Many universities with the specialization of "education" conducts the lectures preparing student to do their didactic job with use of IT. Teaching computer science requires also appropriate treatment [6,10,11]. Such a preparations have the following effects:

- Familiarization students with methods of searching information (especially those available in electronic form),
- Shaping the ability to appropriate selection and tidying up gathered data with use of available software,
- Shaping the ability to critical evaluation of usefulness gathered information to educational tasks as well as to upgrading the vocational qualifications.

All of these is to result in reducing time intended for content-related preparation to classes in favor of lengthening the time intended for methodical preparations in the future professional activity of students.
Rational preparation of classes requires to select the appropriate methods, especially effective for accomplishment of classes aims, which assure the good level of knowledge mastry through active participation of students, which shapes the required abilities and approaches [1]. Appropriate selection of didactic media which can raise students' interests go into the making of teaching-learning effectiveness. Ability to balance them in the right way while implementing teaching content shows competence of a teacher. Unfortunately the specifics of curricula of technical subjects causes, that it is not possible to accomplish the curricula in attractive and motivating student activity way, at least not with use of simple didactic tools. Using more complex didactic media becomes more and more often indispensable part supporting the process of technical and IT education at each level of education. Therefore, while preparing students to their future job one should take into account the issue of rational usage of advanced media in their future didactic work.
One of the element, that influences the results of teaching and supports the communication process are applied didactic tools. While accomplishing didactic activities teacher use the series of appliances. These appliances support teacher at her/his work and improve knowledge assimilation by students. Appliances, that appear together with technology development, provide more and more modern possibilities of transferring information. Quality of education and professional preparation depends on teachers' abilities and pedagogical knowledge in the first place. Nowadays one aspires to create such a teaching model, that helps to shape students' ability to creative education with use of the latest achievements of technology.

4. Conclusions

System of education shortcomings comprise teachers of technology and computer science education. Therefore there is a need to indicate the main directions teachers'

education should go into. One should take into account the future vocational activities and on their basis point at the changes in curricula of techers of technology and computer science. [12]. One should consider the set of values and shaping personality and approaches of future teachers. Forming the abilities and core competences essential to fulfilling different functions and teacher tasks is also of the great importance.

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