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MODEL OF SUPPLEMENTARY PEDAGOGICAL EDUCATION OF SECONDARY SCHOOL TEACHERS AT THE SLOVAK UNIVERSITY OF TECHNOLOGY

Lubica Vaskova
Slovak University of Technology Bratislava

Dagmar Ruskova
Slovak University of Technology Bratislava

Abstract: Paper analyses the model of training of technical subjects' secondary school teachers, graduates from technical universities, from the viewpoint of content focus and proportionality of individual subjects in the supplementary pedagogical study. The Slovak University of Technology by providing supplementary pedagogical study satisfies the requirements of secondary schools to obtain highly qualified specialists- teachers of technical subjects. Candidates for supplementary pedagogical study have a deep knowledge of the main disciplines content of their branch. Candidates are therefore full- valued graduates of technical universities (having the title Master of Science-MSc), who have completed the second degree of university technical education. They are graduates of the following faculties: Faculty of Architecture, Faculty of Civil Engineering, Faculty of Mechanical Engineering, Faculty of Chemical and Food technology, Faculty of Materials Science and Technology, Faculty of Electrical Engineering and Information technology, Faculty of Informatics and Information technologies. In the accredited model of supplementary pedagogical education are dominant those studying subjects which are not part of study programs of graduates of technical universities and which are necessary for pedagogical-psychological and didactic erudition of teachers in teaching practice. Graduate acquires the adequate teaching competencies – the ability to design, implement, manage and organize the work in class and to create a positive climate, to diagnose students' abilities. Graduate gains the possibility to self-reflection, can participate in the elaboration of educational materials for teaching practice, is familiar with educational technology and ICT development in the didactics in the relevant field. Graduate of supplementary pedagogical education is completely prepared and qualified to perform the teaching profession of technical subjects at secondary schools –ISCED 3 and 4.

Keywords: Supplementary pedagogical education, pedagogy, psychology, didactic

Introduction

The current model of the arrangement of the world, characterized by the shift from classical traditional commodities to the knowledge and commodities dependent from the knowledge, demands a new philosophy of education and training. The philosophy in which human creativity becomes a key factor the core value of society. The quality of technical education in Slovakia is naturally determined by reflection not only of this philosophy, but also of rich historical background.

Technical Education In The Slovak Republic

Technical education in the Slovak Republic is unique in the world – in Banská Štiavnica, was founded the first college of technical orientation in the world. The location of the school in the territory of Slovakia – in that time it was Hungary – was not accidental. As early as 1737, a vocational school (today we would say a secondary school) of mining was founded here, under the direction of Samuel Mikovíni, a cartographer and a mining expert of European format. Queen Maria Terézia, in that time Austrian monarchy, ordered to set up technical college by

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*Corresponding author: Lubica Vaskova- Email: lubica.vaskova@stuba.sk

the decree from the 13 December 1762, this university became the centre of technology and mining science of development not only in Europe but also in the world.

At the Technical University in Banská Štiavnica as the first was founded Department of Chemistry and Mineralogy on 13 June 1763. Its first professor was Nicholas Jacquin, a native of Dutch Leyden. He started giving lectures at the beginning of September 1764. The second department was founded in 1765. The department provided teaching in mechanics and hydraulics. The first professor of this department was Mikuláš Poda, a professor from Graz in Austria. In 1770 the third Department, Mining Art and Mining Law was founded. The first professor of this department was Christoph Traugott Delius, a German mining professor from Walhausen in Thuringia.

The developed mining industry in Banská Štiavnica and the surrounding area gave the new university a unique opportunity for the perfect interconnection of theoretical training and its practical outcome. It is symbolic that this year we celebrate the 255th anniversary of the founding of this technical university. Although our Alma mater – Slovak University of Technology is not explicitly a successor of it because the continuity was interrupted by the political and economic conditions at the beginning of the 20th century, we proudly and with respect, report to this tradition in our 80 year of history. Individual faculties of the Slovak University of Technology in Bratislava provide graduates training in a wide range of technical disciplines.

There are the following seven faculties of the Slovak University of technology – Faculty of Mechanical Engineering, Faculty of Materials Science and Technology, Faculty of Civil Engineering, Faculty of Architecture, Faculty of Electrical Engineering and Informatics, Faculty of Information Technology, and the Faculty of Chemical and Food Technologies.

The Profile Of Graduate Of Supplementary Pedagogical Education

For more than 50 years (since 1963), our university has a department that provides the Supplementary pedagogical education for graduates-engineers. The aim of this department is to provide adequate propaedeutic of technical education in education levels of the ISCED 3, ISCED 4 by training qualified teachers of technology. The students of supplementary pedagogical education are either graduated engineers who returned to school after work in practice and complement their education in the field of pedagogy, psychology and didactic or undergraduates of STU who in addition to engineering studies attend supplementary pedagogical education during the last two years of study at university. The study takes four-semester and ends with final examinations and defence of the final thesis. Graduates obtain a certificate of teaching competence for vocational subjects at relevant technical schools (ISCED 3, 4).

Graduate of a supplementary pedagogical study represents a model of mutually complementary competencies:

Professional competencies oriented to the student

Professional competencies oriented to the education process

Professional competencies oriented towards the professional growth and the self-development of the teacher

Professional competencies oriented to student

Professional competencies of the graduate of the supplementary pedagogical study oriented to the student:

- to orientate in the current theoretical models of professional socialization and education with an emphasis on models of cognitive development and cognitive socialization and models of personal and social development of youth
- to be able to identify the developmental and individual characteristics of the secondary school student
- to be able to identify the psychological and social factors of student learning
- to lead the student to creation of a system of active and purposeful actions to acquire the value knowledge of the technic in relation to economic, ecological, social and ethical aspects

Objectives in the field of knowledge

- to explain the patterns (regularities) of psychological development and individual peculiarities of the secondary school student
- to describe the methods and tools for identifying student's developmental and individual characteristics
- to describe the learning styles and other characteristics of students influencing learning process
- to describe methods and tools for identifying learning factors

- to describe methods and tools for identifying student's characteristics influenced by the socio-cultural environment

Objectives in the field of capabilities

- to determine development characteristics of student by using the appropriate methods and tools, to interpret them and choose the adequate approach of pedagogical interaction
- to identify the individual characteristics of students in learning
- differentially choose the optimal strategies for working with students with special needs and students from different socio-cultural backgrounds

Professional competencies oriented to educational process

Professional competencies of a graduate of a supplementary pedagogical study oriented to the educational process:

- to master the subject matter, methodology and structure of the taught subjects and their didactics
- to know how to plan and design teaching with regard to the learning context
- to know how to how to teach
- to know how to evaluate the progress and results of teaching and learning students and to diagnose the internal conditions of teaching.

Objectives in the field of knowledge:

- to know the theoretical and practical relationships of branch didactics in its specialization with regard to designing of teaching
- to know the subject matter of the subjects and their didactics
- to explain the basic curricular documents and the methodology of their creation
- to describe the teaching planning process
- to define and classify material and non-material means of teaching
- to introduce criteria for the didactic efficiency of teaching
- to explain the theory of learning as the basis for an adequate choice of the teaching model
- to describe the strategies for personal and social development of students and students with special needs
- to describe methods of detecting student's diagnostic data, diagnostics principles, stages of diagnostic procedure
- to describe the diagnosis of internal teaching conditions
- to describe the types and methods of evaluating the process and outcomes of teaching

Objectives in the field of capabilities

- to adapt national education programs to specific conditions of school, class and students
- to participate in the creation and updating of the school educational program
- to assess and select the subject matter of taught subject, relevant to the objectives and performance standards, with regard to the specific needs of professional practice, region and innovations in the field
- to identify the cross-curricular relationships
- to identify the structural elements of the taught subject and their relationship
- independently design the curriculum of the taught subjects and the lesson
- didactically transform, interpret and effectively communicate the basic content, methodology and epistemology of the disciplines of own technical specialization
- to assess the universality, durability and relevance of innovation in the field for vocational education training
- to practically implement new knowledge into the curriculum of the specialist subject
- to select and use relevant methods, forms and material resources with regard to the educational context (goal, character of subject matter, student)
- to respond flexibly to unexpected situation in the classroom
- to motivate and communicate effectively with students

- to ensure a smooth course and pace of learning, to promote and develop activity of students in teaching process
- to create a positive climate and prevent problem behaviour of students
- to manage and monitor learning of students
- to use diagnostic methods aimed at the knowledge students, their attitudes, interests, value orientations, relations to teaching subject, school work as well as the' relations among students
- to identify the level of students' knowledge and skills by various diagnostic methods
- to interpret and evaluate identified diagnostic data, to suggest pedagogical measures

Professional competencies oriented to the professional growth and self-development of a teacher

Professional competencies of the graduate of a supplementary pedagogical study oriented to the professional growth and self-development of a teacher:

- to be capable of self-reflection and self-evaluation of own pedagogical activities
- to plan and implement own professional growth and self-development in the context of mobility.

Objectives in the field of knowledge

- to describe the tasks, types and phases of self-reflection, the goal of self-reflection and self-assessment
- to describe methods of self-reflection and self-evaluation
- to describe current trends in own field, in information technologies and in education and training

Objectives in the field of capabilities

- to define areas of reflection and assessment in own pedagogical activities
- to identify the strengths and weaknesses of own pedagogical work
- to set objectives and methods of own professional growth in accordance with prospective trends of education and training, the intentions of the school and the professional role
- constantly increase the level of own personal and professional qualities.

Conclusion

At the beginning of this paper we stated that the shift of the economy to knowledge requires a new philosophy of education and training. However, the need of new philosophy is not just conditioned by knowledge-based society. We think that the key determinant of the need for change in education and learning is the spirit of the time we live in. The civilized world has lost sight of what in antique period Plato called as a Good represented by the symbiosis of truth, modesty and beauty. Comenius in the 17th century as wisdom as a virtue. Kant at the beginning of the 19th century as a moral imperative. In the 21st century, neurobiological research confirms that the process of rational choice is penetrated by emotions (Damasio, 1996). It turns out that the changes in human action result from the need to adapt their actions to feelings of other people, while the rationality need not always be dominant. And so the graduates of the supplementary pedagogical education should be not only excellent technicians and excellent experts in didactic transfer. The necessary base of teacher-technician is his or her altruistic and moral equipment. The teachers have the chances of entering the value-ladder of students with their examples in the process so that their moral principles are goals for themselves. And we consider this to be the most important pillar of complementary pedagogical education.

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