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The role of technology in the system of educational subjects at elementary schools

Summary

The article deals with the issue of incorporating the school subject technology, with its interactive content, into the system of educational subjects at elementary school. It should make a significant contribution to the technical education of pupils and their future professional orientation. Technical education is an organic part of general education, as was also underlined by the UNESCO World Organization. Already in 1974, it announced a program according to which technical education should aim at acquiring the basic knowledge in the field of technology and its practical application in solving technical problems. Our State Educational Program supports a comprehensive approach to developing pupils' ability to learn, act, evaluate, understand and comprehend, at a given level of education. It is a starting point and a binding document for creating an individual school educational program that takes into account specific local and regional conditions and needs.

Key words: educational program, technology, elementary school.

INTRODUCTION

The State Educational Program (SEP) of schools is, according to the new Education Act, hierarchically the highest target education program, which includes the model of a graduate, the the school learning plan and its framework curriculum. It represents the first, framework level of a two-level participatory model of school management. Nowadays, in the field of lower secondary education, the

new state education program obviously develops the role, tasks and objectives of the subject of the technology. After several negative changes, the subject is undergoing a period of versatile development and consolidation aimed at modernizing the content, technical equipment and methods used in teaching. This is what the innovated content and performance standards of the subject matter at the present time is contributing. Providers of general education have a significant role to play in teaching the technically literate pupil:

- ready to take an attitude and address the roles and problems of everyday life,
- possessing information from all fields of technology in the socio-economic context necessary for professional orientation and application in life,
- having basic knowledge of energy and energy resources, materials and technologies for their processing,
- possessing technical skills.

The aim of the current subject is to create selected key competencies of the students in the field of technology, to acquire knowledge of skills and habits in practical activities with technology and technical materials, as well as an important professional orientation of the pupil.

1. THE IMPORTANCE OF SUBJECT OF TECHNOLOGY IN EDUCATION

Man is formed in the process of education and training, as in a targeted process aimed at the development of positive qualities and abilities. The stages of community development and later of the society had diametrically different demands on the content of education, and consequently the individual components of education were created under this influence. Education is linked with the development of human society, it has developed in it, evolved. The content of education reflects the concretization of education goals and also has its historical conditionality. At present, the education systems of the European Union and the developed countries of the world devote particular attention to technical education at the various levels of schools. In the education system, technical education has a special place. Despite the differences in the naming of technical subjects in these countries (eg Design and Technology, Scientific and Technology, Technical Education, etc.), the subject matter is focused on materials and processing technologies, ecology and technology, principles and systems of technical equipment, work and economy, home work, computer work, and so on. Technically oriented subjects in EU countries are generally mandatory in lower grades, while in higher education they are optional, according to the school's focus. Overall, special attention is paid to technical education in the world and in the European Union. The development of knowledge, competencies and skills that young people should acquire when achieving a certain age or educational level is a common goal of technical subjects. Almost all states of the European Union and the developed countries of the world technical learning represent a major component of education. For technical education in the advanced countries of the European Union, the rapid development of the latest technologies and the penetration of information technologies into all areas of life is the basis. By comparing the content of the curriculum in advanced countries of the world, selected countries of the European

Union, we will find out that the different subjects and themes are similar, but also with visible as well as obvious differences. Therefore, it is clear that standards of curriculum are significantly affected by economic, social, political needs and goals.

Looking at the teaching of technology in our country, pupils in the teaching process are developing graphic, constructive, technical and technological knowledge and skills. The theoretical and practical teaching of pupils will be carried out in a mutually connected way, to which also contributes the mentioned innovation of the standards. In the school year 2015/2016, an upgraded State Education Program ISCED 2 entered into a lower level of secondary education. The new Framework Curriculum, along with the updated Education Standard of the subject, is part of the SEP. The current state of the subject is, that the teaching of technology is realized in the 8th and 9th year of the elementary school according to the old SEP; the teaching of technology is realized in the 5th to 7th year of elementary school according to the new, innovated SEP. This gradual introduction of the upgraded SEP will be completed in the school year 2019/2020. This is on the level of one lesson a week, which is an important step for technical education in elementary schools. However, the subject committee considers the inclusion of the thematic sphere of the household economy into the educational standard of technology as a major issue. The subject of the technology itself is included in the area of „Man and the World of Work“ in the innovated State Educational Program for Lower Secondary Education - Secondary School. The subject of the technology leads pupils to learn and acquire basic skills in different areas of human activity. The content of the subject matter consists of a set of thematic units. These thematic units are divided into individual thematic areas and those on individual educational topics. It is the one of few subjects that is focused on the practical activities of pupils. Through practical work in stages, they have to acquire basic working skills and habits and gain key competencies in the technical field. The role of pupils is to design products, plan, organize and evaluate the work objectively. The major role of the subject is the professional orientation of pupils in the field of technical education.

2. GOALS OF THE SCHOOL SUBJECT TECHNOLOGY

If we analyze the school activity of pupils, at the individual stages of subject education, at the stage when we determine the work tasks for pupils, an urgent need arises before the subject, that is acquainting them with the objects of the work activity. The teacher must organize the activity by first familiarizing them with the general (common) features of the device, its designation and use. At this stage, pupils also actively engage in activities, particularly those related to the analysis of their own work structure. For example, pupils can judge the technical shapes of each detail, looking for structural elements (holes, holes, holes, recesses, protrusions, rounds, etc.). At the same time, they can recognize or differentiate the diversity of geometric shapes. In the next stage, in a joint discussion, they may justify the choice of those or other technical and geometrical shapes of components from different aspects, from the point of view of applying the rules and principles of construction, simplicity and usefulness of the elected parts, their technological, strength, reliability and the like. Due to the continuity of the teaching process, the didactic aspect is inevitably observed at these stages. From the beginning, pupils are to get only some introduction to technical concepts, in the following phases expanding with new concepts, consolidating the initial knowledge from their gradual development, in separate practical works, in

solving various constructional, manipulative and production-technical tasks. At the final stage, pupils have the opportunity to solve problems, design solutions, choose appropriate materials and prepare proven workflows. These and similar practical and didactic roles are currently the subject of the content learning area Man and the World of Work, as the focus of this subject is based on the theoretical foundations of the natural sciences, especially the technical departments.

3. OBJECTIVES OF THE SUBJECT TECHNOLOGY

The learning process can not be perceived only in its educational function. Teaching is also important upbringing activity. There are close links between education and upbringing. The unity and synergy of these components creates an educational-upbringing process. It is determined by dynamizing components we call goals. It is clear from the above that teaching is not only something to learn but is a set of goals in cognitive, psychomotor and affective areas that have a significant impact on the course of education in technology. In the subchapter we will briefly address the selected area of the teacher's work, which is his work pertaining to the teaching objectives. In addition to general didactics, we have disciplines that deal with specific patterns of teaching and learning in groups of related subjects (divisional didactics) and individual subjects. Didactics of technology deals with all actors of the educational process and their interrelations with the main aim of fulfilling the objectives of the subject matter of technics in elementary schools. Methodology of technology is part of didactics of technology (theoretical basis) - its aim is to create models of teaching hours and units, which achieve the planned realization of the content of education and fulfillment of the objectives of the subject Technology. The general social goals of education were determined by the law no. 245/2008 of 22 May 2008 (the so-called School Act) in Section 4. These are the framework options for the education of a child and which dispositions and competencies are necessary for the pupil to develop with regard to social need. The school subject Technology participates in acquiring them. The course will lead pupils to acquire basic user skills in various areas of human activity and contribute to the knowledge of the labor market, the development of the pupils' life and professional orientation. The concept of the subject is based on concrete situations in which one comes in direct contact with human activity and technology in its diverse forms and wider contexts. Through technical conveniences it protects the world and cultural heritage. The subject must be based primarily on practical work. Its focus is focused on skills and habits of pupils for the use in the further life and in society. It is based on creative thinking and student co-operation.

Teacher's work with teaching objectives

Teacher's work with education and training objectives can be described as a process that begins already in the context of long-term planning of teaching (thematic education curriculum) and takes place daily throughout the school year. In order for the teacher's activity to make sense, the teacher must know either the specific goal of taking the performance standard or (eg, if the teacher is upgrading the content of the education) to define the learning goal itself, i.e.:

- as a clear result of the learning activity to which the teacher and the pupils are jointly approaching,
- the goal must be functional and formulated so that it can be verified whether it has been met.

These are the observable and expected achievements of a pupil, ie the development of his or her abilities, skills, habits and knowledge expressed in the final state but not in the state of the process. The initial work of the teacher with the specific objectives of the lesson continues, i.e., specific objectives for each lesson teacher further individually classifies according to criteria into two groups:

- 1st group – by area targeted (cognitive, psychomotor, affective),
- 2nd group – by level (s) of learning the knowledge, skills, attitude... for which the goal is formulated (eg remember, understand, know how to apply...)

The goal of the teacher is to select specific tasks and activities by which the teacher presents, practicals, consolidates and diagnoses pupils' learning outcomes (status of meeting specific goals). If the specific objective is correctly defined, it is based on the didactic analysis of the subject matter, it indicates the methodical teaching process, the operationalization and determines the way of teaching management.

Teacher's work with goals can be summarized as follows:

- each pupil's activity should lead to a set goal,
- each goal should be achievable for the pupil,
- each pupil should have the opportunity to assess whether or not they are approaching the target,
- goals should also be important outside school,
- goals with a larger perspective are more interesting than unattractive partial goals,
- the more we approach the goal, the more it is attractive.

In specifying the content and objectives, the teacher should consider the following requirements: proportionality of the curriculum (adequacy), adequacy of the knowledge, skills, habits and abilities of pupils of the given year (know previous level of pupils), clarity, controllability, material and technical conditions at school and the possibilities of the teacher. Through this procedure the teacher will form the basis of the educational process and will plan the specific contents and the objectives of the subject, in full compliance with the subject standards.

CONCLUSION

The school of the future foresees a change in the role of a teacher who becomes a student's partner on the path of active self-discovery and learning. Here an important role is played by the subject of Technology in which the pupils' activity in the learning process represents a conscious and active attitude, active physical and psychological activity, aimed at acquiring certain skills / habits and their application in practice. Active learning in the subject requires pupils to actively engage in reading, writing, dialogue, analysis and evaluation. The autonomous activity of pupils is not only the goal to which all the educational work is directed, but also the method and means of achieving the objectives set before the subject of Technology, in learning and in creating desirable ways of doing things.

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