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Basic Curriculum Changes in Technical Education at Elementary Schools in the Slovak Republic

Podstawowe zmiany programu nauczania w edukacji technicznej w szkołach podstawowych w Republice Słowackiej

Introduction

Before embarking on a consideration of technical education and its conceptional starting points in the Slovak Republic, we should ask: What is the aim of basic education? Indeed, it is not easy to define its point particularly in the context of contemporary cultural claims pertaining to human beings. The main characteristic of humans is that they live in the cultural dimension: this is what makes them specifically human. From this point of view, a school, in terms of its educational function, serves to focus and mediate those cultural elements that have attained a stable acceptance relative to the values taken to determine a given social space. If such an education thus entails a process of acculturation, and such acculturation itself necessarily follows on from a prior period of formation with respect to achieving cultural literacy, then the sense of education will tend to reside in establishing cultural literacy – perhaps even taking this as its basic aim.[1] Technology is also a part of this culture, and has even become

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[1] Z. Kollarikova, B. Pupala (eds.), *Pre-school and Primary Pedagogy*, Prague 2010, pp. 415–418.

a motivating force for it nowadays; hence, schools have a responsibility to make such acculturation possible for everybody in this sphere, too. With regard to conceptions of technical education, authors have thus mainly started out from issues of general cultural literacy, at the same time treating scientific-technological literacy as a fixed element within this.

The elementary basis for scientific and technological literacy

The importance of technical education in the context of the overall framework of general education is emphasized in almost all developed countries, and has also been emphasized by UNESCO, with the latter affirming the necessity of technological literacy with respect to its own program. Many authors have, moreover, tried to pin down this notion (Dyrenfurth[2], Jenkins[3]). The subject committee for technical education in the Slovak Republic itself approached this by starting out from a wider comprehension of scientific-technological literacy – one consisting of three subgroups[4]:

● emancipatory value,
● operational literacy,
● communicative and informational literacy.

Emancipatory value stems from our human interest in technical development in the different new advances occurring in this sphere. It consists in the ability to evaluate the relationships between ourselves and our surroundings, and between individual components of the environment.

The second subgroup pertaining to scientific and technological literacy is so-called operational literacy. This is the ability to master today's technical devices and grasp the basic principles relating to these. Learners are supposed to obtain the skills necessary for making proper use of that technical equipment which they have at their disposal, and which is appropriate for their abilities and for ensuring their safety at work.

The third subgroup pertaining to scientific and technological literacy is so-called communicative and informational literacy. This concerns the ability to communicate via modern technological devices (telephone, fax machine, e-mail and so on), the ability to obtain information using a PC, and the ability to work in ways that make use of such information (computer databases, etc.).

[2] M. Dyrenfurth, *"Technological Literacy" – extensive und intensive Aspekte eines Bezugssystems zukunftiger Bildung*, "Polytechnik" 1991, No 1, pp. 20–27.
[3] I. Kruspan, *New contents in technical education at the second stage of primary schools*, [in:] *Technical education as a part of general education*, Banska Bystrica 1996, pp. 119–122.
[4] P. Gavora, *What are my students like? Pedagogical learner diagnostics*, Bratislava 2009, p.116.

Another specific kind of communication in the technological sphere is technical illustration. This concerns international and national technical norms, rules and regulations, which are understood by all technically specialized workers within the field irrespective of their own languages. At the same time, we cannot imagine a complete technical education without also considering the most elementary foundations of scientific and technological literacy: to be sure, basic education must furnish the foundations for the next level of studies, but we must also start preparing individuals just to be able to live and function in a technically advanced society themselves.

Elements of technological literacy in the conception of basic technical education in the Slovak Republic

Since 1990, teams of experts from Slovakia have been working on redefining both the competitive aspects and the underlying aims of technical education itself. Every year, finished research is published, and the new knowledge thus made available provides the basis for the next set of emerging tendencies in the field. In its latest program, the following trends have been stressed[5]: The human uses of technology

Technology is a special phenomenon – a human product that is pervasively active in the background of our lives. The direction of our technical development depends on human morals, reflecting the usefulness of that which it is meant to help us accomplish. Education should thus invoke the sort of knowledge that takes proper account of the human influence on the world around us, and the fact that people themselves are responsible for the future of this world.

Changes to the content of technical education at primary schools

The elementary school curricula for 2014 exhibit an increased number of significant changes in respect of the contents of technical education. These new contents of are understood in the context of human culture at the beginning of 21st century. The aim is to understand technological influences and contribute to the formation of positive relationships involving humanity's use of technology – surely the really important thing in technical education. Nowadays, emphasis is placed on the following:

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[5] *Curricula for elementary school*, Bratislava 2014, available at: http://www.statpedu.sk/sk/Inovovany-Statny-vzdelavaci-program/Inovovany-SVP-pre-1-stupen-ZS.alej (access on: 30.07.2015).

● The field of technical illustration. Learners gain experience making technical outlines and sketches, learn to understand technical pictures and technical symbols, and try to come up with optimum designs for solving construction-related problems;

● The field of technical materials. This aims to investigate the characteristics of technical materials, elaborating technology issues pertaining to these. Pupils learn to choose the most suitable materials and tools, to plan and organize their work, and seek out the most suitable procedures for implementing plans for product manufacture.

● Construction. Learners gain basic skills connected with technological processes (i.e. choice of materials, tools, technical operation methods, work planning and work organization).

● Making use of and handling electricity. Pupils become familiar with electricity, and get practical experience of working with it (operating with voltages of up to 24V).

● Technical equipment. Learners acquire useful skills for deploying equipment suited to their abilities and adequate from a work-safety point of view.

● Repair and maintenance. They learn how to use technical equipment in the household, and how to repair it in line with their abilities when needed.

While the main aim of the previous program was that of gaining knowledge and practical skills through the descriptive elaboration of the various technical materials involved, under the new conception the actual investigation of the characteristics of technical materials is judged important, as is searching for the most efficient methods for implementing any plans pertaining to product manufacture. The aim is to achieve positive result through one's own inventiveness and one's own investigations.

Changes in strategies and methods relating to technical education

Innovations pertaining to the aims and contents of technical education will not be effective without corresponding improvements in the quality of the teaching process itself. Under the new conception of technical education, this is primarily a question of overcoming certain worker-related attitudes, while looked at in specifically pedagogical terms it is necessary to overcome those rather simplistic approaches to human behavior and its interpretation in which external considerations pertaining to efficiency of performance prevail over all else that may be of importance to pupils as human beings. Above all, within the context of the teacher–pupil relationship, the latter counts as an active subject. Under the new

approach, internal learner activity comes first: the stress is on developments relating to their creativity, spontaneity, freedom and individuality. The teacher–learner relationship must be developed on a partnership basis, with learners having the space to take the initiative and be creative. Within the educational process, priority is given to those methods that enhance learners' experience, creating opportunities for them to pursue their own engagements actively and demand that they have their own attitudes and opinions. A teacher creates situations in which learners can put different activities to use in the service of some goal: for example, objects manipulation, experimentation, projection, theoretical and practical problem-solving, and so on. This is not just about fulfilling cognitive goals, but is also, for the most part, value-oriented, fostering such personal characteristics in learners as, for example, reliability, perseverance, and a sense of duty, while also developing the ability to cooperate and help one another.

New approaches in technical education are based on learner teamwork. Teamwork is also used in solving different technical problems in real life. Solving technical educational tasks through such teamwork in a group of learners gives access to a variety of skills and attitudes, including a capacity for, and willingness to engage in, shared work planning and organization, work distribution, mutual help, communication, coordination of efforts, tolerance, applications of one's own ideas, non-violent conflict (accepting defeat), assuming responsibility for teamwork, etc. The results of research show that interactions between learners and their schoolmates play the most important role of all in their personal development.[6]

Example activities

Topic of the day: Stone – an uncommon toy

We know that stones offer children a rich spectrum of possibilities in terms of the emotional and aesthetic realms, affording opportunities for creativity and socialization.

1. Making a common picture

The children are in a meadow, standing in a circle. Each child throws "his/her" stone into the middle. They watch it, try to say what the result looks like, what it reminds them of, and try to name it. But some of the children are dissatisfied with the picture there. There comes a new idea: we should consult one another about how the picture has changed. At

[6] J. Piaget, B. Inhelderova, *Child Psychology*, Prague 1970, p. 96; A. Astin, *What Really Matters in General Education. Provocative Findings from a National Study of Student Outcomes*, Seattle Meeting 1991, pp. 23–26.

last, children are talking about the picture, about their ideas, by moving the stones. They take it in turns to come to the picture and each move one or more stones around.

2. Making a group picture

They liked this idea and wanted to try to do it with their best friends. They consulted with their best mates as to what they could change, how to "embellish" and make it more interesting. We decided to have an "exhibition" of all the works. The authors sat in front of their own pictures so that it would be clear who was the author of them, and talked about what they had produced. A beautiful gallery of original children's products was created. The others stood in a "half circle" in the front of the picture, asking questions and evaluating the results.

3. Building castles

Children liked the group work so much that they wanted to make new things. Many children were inspired by fairytales. They proposed building castles so that we would see beautiful castles "growing" in front of our eyes. They liked to go nearer to water, where there is a great deal of stones, water and earth suitable for making things from mud, and so they create four groups and started to get to work building. The boys designed and built castles, while the girls "helped" (bringing stones, holding up the castles, looking at the other castles, and trying to change some details). In the end, everybody looked at each other's castle, evaluating all of them and also assessing their work together. The children also commented on their own castles and drew attention to those details they were especially proud of. The children have a wish – to go back to the castles and act out some theatre there.

For the children in question, these activities opened up a rich spectrum of possibilities as regards emotional and aesthetic engagement in the context of play. They learned to experiment with different kinds of natural materials, determining their different special qualities and the possibilities for making creative use of these, and this constituted a major contribution towards their development as regards their ongoing and subsequent technical education.

Conclusion

The trends in technical education mentioned here correspond very closely to related trends in general education, having as they do very much the same purpose: there is a rejection of any external pressure being placed on pupils (involving one-sided dominance by the teachers and mere obedience from pupils). Instead, the changed ethos pertaining to the educational process today is emphasized, stressing collaborative abilities, the

fun and joy to be had from learning, principles of individualization, and the development of pupils' personalities with respect to the integrity and harmony of their cognitive, emotional and practical abilities.

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Abstract

Significant curricular reform took place in the Slovak republic in September 2008, resulting in a new two-level curriculum. However, not all of the standards established have proved helpful to teachers, schools, parents or students, either in relation to the achievement of positive educational goals or when it comes to providing support for the evaluation of students. Therefore, the National Institute for Education has created a new committee of experts for areas in education, whose task has been to review the existing educational standards and propose new ones. Technical studies are a part of our culture and have even become the driving force of our times, so schools should allow all of their pupils to undergo proper acculturation in this area. Technical education is, moreover, considered an important part of the process of educating young people. It may count as preparation for a future career, and, in many cases, has real applications in the labour market. The author of this paper was responsible for creating new educational standards for technical education at primary schools. The concept of technical education employed here is based on general cultural literacy, with scientific and technical literacy viewed as a fixed element within this. In the current paper, the author wants to introduce the principles that define the new conception of technical educa-

tion at primary-school level in Slovakia, both in terms of its contents and in terms of its character as a process. Within the process of learning, a great deal of attention is paid to the personality of the pupil. The article states the main principles of learning, acquired from personal teaching experience. This new conception of technical education will be in force from September 2015 at all schools in the Slovak Republic.

Keywords: curriculum reform, technical education, primary education, conception of education, educational standard.

Podstawowe zmiany programu nauczania w obszarze edukacji technicznej w szkołach podstawowych w Republice Słowackiej

Abstrakt

Dla Republiki Słowackiej istotne znaczenie miała przeprowadzona we wrześniu 2008 roku reforma programowa, która wyodrębniła nowe dwupoziomowe programy nauczania. Wobec braku ich akceptacji ze strony nauczycieli, rodziców i uczniów Narodowy Instytut Edukacji utworzył nowy Komitet Ekspertów dla obszarów edukacji, którego zadaniem była ocena istniejących standardów edukacyjnych i zaproponowanie nowych. Nauki techniczne, o których mowa w niniejszym artykule, stanowią część naszej kultury i dlatego też szkoły powinny umożliwić wszystkim uczniom przejście odpowiedniej akulturacji w tej dziedzinie. Edukację techniczną uważa się za bardzo ważny obszar w procesie edukacyjnym. Autorka tego artykułu była odpowiedzialna za stworzenie nowych norm edukacyjnych dla edukacji technicznej w słowackich szkołach podstawowych. Zastosowana koncepcja edukacji technicznej oparta została na ogólnej znajomości kultury, gdzie nauka i technika postrzegane są jako jej stałe elementy. Autorka przedstawiła zasady funkcjonowania nowej koncepcji edukacji technicznej na poziomie szkoły podstawowej w Słowacji pod względem jej struktury, charakteru oraz sposobów realizacji. W procesie edukacyjnym dużo uwagi poświęca się kształtowaniu wszechstronnej osobowości ucznia. Artykuł wyznacza główne zasady uczenia się wypracowane poprzez własne doświadczenia w nauczaniu tego obszaru. Prezentowana nowa koncepcja nauczania technicznego zostanie wprowadzona w życie we wrześniu 2015 roku we wszystkich szkołach na terenie Słowacji.

Słowa kluczowe: reforma programowa, , edukacja techniczna , edukacja podstawowa, koncepcja edukacji, poziom wykształcenia.

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