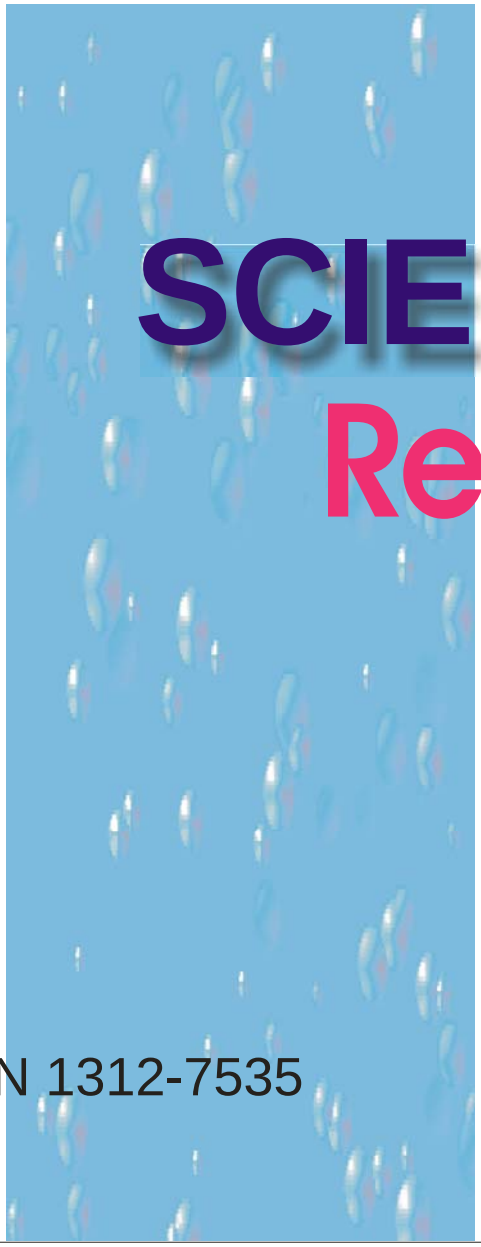
SOUTH-WEST
UNIVERSITY
·NEOFIT RILSKY·
BLAGOEVGRAD, BULGARIA

VOLUME 5
2007



SCIENTIFIC Research

ISSN 1312-7535

ELECTRONIC ISSUE

TECHNOLOGICAL PREPARATION IN BULGARIA'S EDUCATIONAL SYSTEM

Em. D. Bojkova, PhD

Summary

The article analyses the school subject "Technological education" which defines its modern understanding as an active educational practice applied during the years. Stress is put on revealing important trends (intellectual and practical) in this specialized education as well on analyzing this interrelation from a very important point of view – main role of students' technological activities

Key words: *technological education, educational goals, educational areas, school subjects, contents of technological education, naming of school subjects.*

TARGETED FUNCTION OF TECHNOLOGICAL EDUCATION

The educational function of technological education is strategically perceived and generally defined as:

- cultivation of thinking that is well disposed to contemporary productive culture, to entrepreneurship (having in mind and targeting at an active human behaviour) and the modern techniques and technologies (in general);
- assisting school-cognitive orientation (having in mind career development and professional orientation) through a better cognition of economical reality and realizing students' abilities and tastes;
- setting up skills to get acquainted, understand and practically master the modern world, which is deeply marked by the changing parameters of techniques and technologies and where computer literacy is given top priority.

These are general (also called final) objectives, which are assumed to be relevant to the European dimensions of this kind of preparation and which are supposed to unite general and technological culture.

Technological education along with its important educational basis seems to be the only active, productively directed strategy in Bulgarian schools.

Firstly - students are confronted to real life and practical situations as well to production problems, which must be solved through their technical and technological literacy, showing efficient planning, communicational and organizational knowledge and skills along with the ability to analytically apply evaluation approaches and procedures.

Secondly - procedural organization assumes and demands modular and multifunctional methodical forms that are closely bound to group, team and project realization of students' activities.

Thirdly - that kind of teaching aims at active understanding of the scope of techniques and at its connection with social, ecological and economical aspects of the new technological culture as well at designing students' own career development.

Technological education (in the frame of the general education) can be regarded as a part of the entire complex of cultural preparation. If we definitely accept the fact that technological education has its own specifics then we can better situate this fact inside the complex of school activities thus outlining their specific unity. Technological education will get the unique chance to start establishing and developing by becoming an inseparable part of them (2). This position is closely tied in not only with the idea of a compulsory presence of technological education as a trend ; it refers to the need that school subjects (natural sciences) should pick up their own scope of problems regarding technological aspects. This ascertains not only the importance of technological education for contemporary culture, but it also involves the explicit sociability of technological education. Hence our country starts implementing new and important programs and initiatives for students in order to assist their professional orientation and to get better acquainted with economical realities, entrepreneurial spirit, etc. These forms are directly connected to and result from students technological activities without which general education remains undefined.

EDUCATIONAL AND SUBJECT STRATIFICATION OF TECHNOLOGICAL EDUCATION

- **The problems**

Technological preparation (as a school educational practice) for decades had given different names to those school subjects and general school structures in the system of the educational preparation. This has not been a mistake or an end in itself. The specific interpretative character of this type of preparation, which has no definite differentiated prototype (form) in the system of the objectivery scientific knowledge (as mathematics, physics, biology, etc.), makes pedagogical thinking search periodically for the most adequate

terms. Renaming the old ones (due to technological knowledge) describes in reality a constant development on a higher level. This reflects a new educational and conceptual idea of technological education for all expectations which society is ready to accept .

It's paradoxical, however, that in this so 'technological and computerized' world, the notion about the technological preparation (even as a state educational policy) is on an elementary level. If something matters it is not the compulsory character of similar school subjects, what matters is to acknowledge the inevitable priority of technological preparation as a part of general education and to be a constant part of lifelong education.

In West-European educational practice public disputes about the compulsory character of technological education as a school subject (or subjects despite the different names) are still not settled down. Main arguments in support of the thesis that school subjects of the technological education shouldn't be compulsory ('compulsory' meaning reticent and combined) build up the general goals of educational systems. Being a compulsory discipline, technological education would become reticent and unnecessarily standardized. Thus technological education is considered as a basic and integral conception which connects productive and social to economic aspects of life and supports students when they have to choose a profession. This attitude is not popular and accepted in our country.

Bulgaria's educational way of thinking tries to implement everything into the pocket of compulsory school disciplines, which being full of humanitarian and natural science knowledge, leaves not much for the rest; and another pocket, that of compulsory preparation, remains empty and obviously is regarded as unnecessary.

In our country we falsely interpret The so called educational minimum of school contents (3) – which in fact is an educational maximum rather, not that much as a school load or variety of forms for preparation, as much as a limit or an impossibility this scheme to develop and integrate in the liberal, realized by every school educational strategies and commitment with the regional peculiarities and interests f the people.

- **The Structure**

The technological general educational preparation in our country is traditionally carried out as a compulsory form of education through compulsory school subjects.

- ✓ School subject 'Crafts' = educationally labeled as "labour education (one subject = one tendency)" – was taught the last third of the 20th century;

- ✓ School subject “Labour education” = labour and polytechnic education combining school subjects ‘Arts and Crafts’ and ‘Labour skills and Techniques’ - was taught till the 90s of 20th century.
- ✓ School subject “Technological education” = techniques and technologies included in the school subjects ‘Housekeeping and Techniques’, ‘Housekeeping and Economic Skills’ and ‘Technologies’ – this is a part of the last state’s reforming strategy for the general educational preparation of students at secondary school level;
- ✓ School subject for the preparatory preschool groups – ‘Constructive, technical and housekeeping activities’ as well as similar, but subject unnamed, preparation for all pupils at preschool level.

These educational tendencies (in general) are socially applied and subsequently institutionalized educational structures (systems), which have age, content and aim differentiated elements. School disciplines (subjects) aim at upgrading students’ competencies in technological culture. This institutionalized meaning (not epistemological) combines and is substituted by the notion ‘subject field’, (a didactic term) . Until now these subjects are defined in school curriculae as cultural and educational fields (CEF), due to governmental educational requirements.

Now the CEF term for technological preparation is ‘Household Maintenance and Technologies’. Most experts and theoreticians, however, think that the name of this school subject in regards to technological education should be ‘Techniques and Technologies’.

- ➢ **Tendencies**

Technological education, as **a compulsory form of school education**, is the only subject in the system of general educational preparation which ends elementary level of education. The number of school hours provided for compulsory preparation (up to now) is reduced in comparison to previous periods of reforms, thus we cannot rely on this quantity indicator, i.e. it is not crucial for the development of students’ technological culture. Therefore, set in a marginal position (compared to West-European educational policies), technological education seeks educational innovative approaches to realize its educational commitment. From this point of view adequate means (as theories and pedagogical practice) should be sought to find relevant for students’ needs models of technological preparation, where students can be

motivated and interested to participate. Additional forms of preparation - compulsory and free eligibility forms of preparation, - are closely related to this problem.

At upper school level, when life and professional activities are set as prerequisite, technological education bears additional and free eligibility forms of preparation and depends on teachers' enthusiasm. Therefore, the extracurricular and out-of-school forms, if connected to applied models (bound by individual's technological, economical and enterprising activities) can successfully perform compensating functions towards implementing students' economical efficiency as future active subjects. And this is what general educational school and its upper level do not offer up to now, and what appears to be an absolute deficit.

taking into consideration this lack of experience we need to learn from the practice of West-European countries, where the situation is different compared to that in Bulgaria – technological training is not only existing , it is very agile (training forms) and bound to a wide range of productive areas, with real participation and presence in different social and production structures.

CHARACTERISTICS OF THE INSTITIONALISED FIELD OF SUBJECTS OF TECHNOLOGICAL EDUCATION

The term "subjects' field" comprises 'that scope of reality (or more specifically understood – those areas of science and human practice) from which a school contents of a particular section or a school subject of a given cultural and educational field on a certain educational level, is selected from and didactically operated in, at a certaion level of education. The scope reveals the thematically cycles of different school subjects through their basic cores and topics of modern school syllabi, and goals of education and training.' (1, 3)

The peculiarity of technological education is associated to what is defined as ontogenesis of technological preparation – techniques or technology, economical or housekeeping activity, or housekeeping activity as a social or production activity, and other aspects that characterize that scope of subjects as too diffusive. To some extent this conclusion explains the difficulties – the high and low tides of the development in technological education as an educational practice. However, this conclusion simultaneously should be perceived not only as a difficulty but also as an advantage and openness for realizing the ontodidactic and didactic innovations.

By analyzing the specific differences among the different fields of subjects, V. Georgieva points out the essential theoretical explanations: 'One should differentiate between the fields of subjects in didactic literature according to the level of structural knowledge that they comprise of, too. There exists a clear structure which determines good fields of subjects, where a mathematical apparatus and an established terminology are applied, and there are not so good structural fields of subjects which are characterized by a clear interdependence among phenomena, for which terminology and theories have to be developed. Poor structural fields of subjects are rich of empirical data, hidden interdependence, and a large number of 'white spots' i.e. undiscovered regularities, weak definitions.'

The question "Is the field of subject of technological education well structured?" – in a time when this type of preparation is 'preinstalled' and is it worth talking more about it (in the context of the contemporary dynamic dimensions of the technological culture), – is certainly unanswered,yet what definitely does not mean that there is a lack of conceptuality in the educational structure. "Categorical estimations cannot be done in this respect because the scope of techniques and technologies is too large. This can be done in more specific fields of subjects, where components are more clearly defined … " (ibid. 4)

We give a short extract from the present educational frame as well some features of the technological education from the presentation of a school curriculum (regarding their place and significance to general educational preparation, to the specific character of the fields of subjects and to some elements with interdisciplinary character).

The educational work in the CEF 'Household Maintenance and Technologies' is designed to build up the base for students' technological literacy and competence as an essential feature of their general knowledge. School subjects in this scope represent specific stages which ignite a process of building household maintenance culture of the individual thus creating basic skills for its future career development. The sequence looks this way:

- After organizing and planning of activities at home one should start building up basic knowledge and skills in order to organize and plan activities in a technological world outside home;
- Modern household equipment and the technical gadgets which dominate the environment should comply with the interdependences arising from the complexity of the environment;
- Skills of how to manage the income of a household and consumption behaviour should contribute to build up an economic knowledge as well help understand and differentiate between basic notions and concepts in economics;

- By understanding how different professions influence family's life, one should start building up skills how to plan his/her professional career depending on individual's own qualities and on his/her perspectives on the labour market.

The first steps into a world of techniques and technologies as put down in "Housekeeping and Techniques" (I – IV grade) help develop pupils' technological literacy and can become part of their school life. Its contents comprises of four subjects (parts) – "Constructing and Modeling", "Work with Materials and Modules", "Techniques", "Plant and Animal Care". Physics, mechanics, and technologies gain significance as well introduction into technical analysis, planning and ecological aspects of technologies.

The technological literacy is being developed by "Housekeeping and Economic Skills" (V – VI grade) to give initial understanding of the relations between Housekeeping Culture - Techniques and Technologies; Scientific Discoveries - Techniques and Technologies; Economics - Techniques and Technologies. The contents reflects in "Home Designing", "Crafts and Contemporaneity", "Energy and How to control it", "Cooking", "Nature at Home". Economical knowledge is given priority by wedging into the taxonomy and its resultative effects.

General basis of technological competence of students graduating from primary school is brought by the school subject 'Techniques' (VII – VIII grade). which establishes the basics of career choice in the field of social and industrial technologies. "Techniques", "Materials", "Computer Techniques and Information Technologies", "Drawing and Technical Documentation" mirror up in the contents for the 7^{th} graders; "Economics", "Technology and Production", "Modern Enterprises" – for the 8^{th} graders. These subjects which convey economical knowledge and form elements of labour law become more and more important. .

To enrich the content of all school subjects which include elements of technical preparation important terms like techniques, technology, economics and culture, as well additional terms like necessity, interest, resource, stimulus, choice, object, quantity, quality, communication, energy, price, market, productivity, efficiency, instruments, material, modules, methods, approaches, operation, strategy, tactics, projects, plan, programmes, arguments, competition, model, income, career, partnership, ecology, ergonomics, aesthetics, system, structure, assessment, criteria are included into school curricula.

References:

1. Georgieva, V. Techniques and Technologies in Education from the age of 6 to 16. Blagoevgrad, 2004

2. Martinan, J. Goals and peculiarities in technological education on the threshold of the 21st century, Perspektivi Magazine, Nr. 93.
3. Bill on educational degrees, on general and educational minimum and school curriculum