Bulgarian Education's Reform and Strategy for Diagnostics of Gifted Children

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Abstract. Transformation of the higher education system of Bulgaria according to the European requirements, problems of the high vocational training and high school - university relations are discussed. Problems with identification of talent children, possible approaches and variant of strategy for diagnostics of gifted pupils are presented in this paper.

Keywords. Vocational & higher education, lifelong learning, diagnostics strategy.

Introduction

After a child is born, numerous physiological problems occur during the various stages of its growing-up. The child is gradually maturing, and then it goes to school where the environment is not like the environment at home. If a student is not correctly educated right from the beginning, he will be not able to overcome any obstacle until his graduation. By increasing the requirements to the education of the students, the responsibilities of a teacher in the pure scientific and teaching work are increasing too.

Because of economical reasons too many of the best and "brightest" young people from the former socialist countries continue to emigrate today for further education and job opportunities. In order to confine this tendency the educational systems of these countries must be reorganised and improved. For example, many observers indicate that Bulgarian classrooms are still dominated by rote memorization, authoritarian teachers, theory without practice, and little chance for children or young people to exercise their creative, problem-solving abilities.

1. Synergetics and Education

1.1 Scientific Education

The methods of scientific knowledge are widely applied in education. The quantitative growth of scientific facts itself does not lead to changes in the traditional reproductive educational system. Essential changes occur when the methods of research and other active

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methods take part in the cognitive process, peculiar to scientific investigation in engineering activity, i.e. so-called "Knowledge triangle" (Fig. 1). The setting up of scientific competency among the students becomes a necessary condition for efficient educational activity and scientific and technological oriented education.

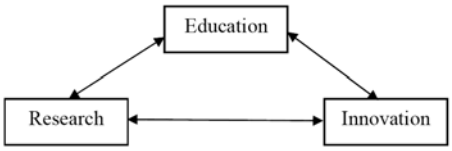

Figure 1. "Knowledge triangle"

In the past decades new ideas for the nature and the world were built up. Two parallel transformations were outlined - from modern to post-modern community (and education) and form classical and neoclassical to post-neoclassical science [1]. One of the most important characteristics of post-neoclassical science is related with the concept of knowledge as a complex multilevel organisational system. Synergetics [2] is dealing with such system. As I. Prigojin says, the end of determination completes the paradigm of classical science [3]. The new science penetrates the world of non-linear thinking that reveals unexpected relations between the structures and the chaos and its constructive role for self-organisation of processes into open systems and their relation to the medium.

1.2 Introduction of Synergetics principles in education

Our 21st century is a century of interdisciplinary researches. In this dynamic, non-linear world, every person or social group is facing the uneasy choice of ways of the own development. The education is that important link in the spiritual space of the human life, which is called upon to transfer the social experience between the generations. The new methodology based on the science could become a guarantee for a success in the pedagogic theory and practice. Synergetics as an interdisciplinary course in science studies the mechanisms of the evolution, the processes of self-organisation in complex non-linear open non-equilibrium systems. The education is open, complex, non-linear dynamic system, far from equilibrium, so the principles and methods of synergetics seem to be very valuable for solving its problems. Synergetics allows that new ways of training and education are worked out. The natural science education is humanizing, and the human aspect is impossible without the new natural scientific nonlinear methods of research.

Synergetics can be introduced to education simultaneously in three directions [4]:

- "Synergetics for education" means the utilisation of synergetics knowledge at different levels of education in pre-school, primary and secondary school.
- It is expected, that materials illustrating the synergetics principles, are included in private disciplines taken from natural sciences as well as from humanitarian area.
- The accent is on the synergetics of the process of training and education itself.

The internal potential of such complex system could be activated by insignificant external influences through so-called "resonance effect". This approach can be applied to

stimulate the talent potential of gifted children. The self-organisation in the context of education can be viewed as self-education, self-training, self-control, self-knowing, and self-development. Subject-objective interactions in the education process stimulate educational interactivity which leads to self-development of the system elements by stimulating the inborn talent. Application of the rules and principles of the synergetics to the complex system of training and education is in harmony with one of the key ideas of 21st century - idea for continuous education through the whole life, so-called Lifelong Learning (LLL).

2. Bulgarian System of Vocational and Higher Education

Bulgarian educational system is undergoing a process of rapid change based on new value orientations and increased diversity after the reforms in the society in 1989. These changes includes a cautious policy involving a decrease in centralisation and increasing autonomy for schools and covers all training levels - primary, secondary, higher and adult education. Such changeable situation combined with economical difficulties leads to a massive exodus of gifted young individuals ("brain drain"). It therefore has become necessary to establish national education standards, to create common mechanisms with respect to the estimation of student achievement, diagnostics of gifted children of all ages and the grading of teachers' performance.

2.1. Vocational Education

Republic of Bulgaria as a candidate-country for accession to the European Union takes into account the European strategies, policies and practices in the domain of education in development of its national policy. The Lisbon strategy till 2010, the LLL conception, the Education and Training 2010 program, the European Employment Strategy, and etc. are leading for Bulgaria in this point of view.

Since 2000 the accomplished reform in Vocational Educational Training (VET) in Bulgaria has set in direction to realize the European goals of the education and training systems. Bulgaria has participated in different initiatives of regional scale - in the framework of the Stability Pact for South-Eastern Europe in the part “Initiatives for reform in education for the countries in South-Eastern Europe”, bilateral projects, projects of European scale, etc. In the Copenhagen declaration’s perspective, Bulgaria has been included in the preparation of the Maastricht’s communiqué, which main goal has determined the new priorities and strategies for European cooperation in the performance of the Lisbon goals in the domain of VET. A National Strategy for Development of VET [5] and National Strategy for Introducing the Information and Computer Technologies (ICT) in the Bulgarian schools [6] have been accepted in 2004. The Law of VET [7] provides the legislative base on recognition of non-formal and informal learning. By accepting the Law of VET, the Bulgarian tradition students to acquire professional qualification during studying in high school is saved. As a difference to previous years, when the students have received their diplomas for high education after they have passed successfully exams for acquisition of professional qualification, now the students with the vocational high schools have the possibility to graduate their high

education and to obtain diplomas after they have graduated XII class. In the same time they may pass exams for acquisition of II degree of professional qualification and, if they wish, to acquire III degree of professional qualification by continuing their training in XIII class.

Main difficulty in realizing the national policies for education and training are the limited financial resources. On the present stage, the financing of the Bulgarian education and training is performed mainly by the national budget, with quite limited participation of the business. The insufficient investments could effect negatively onto the quality of training. The employers still do not regard the training as a form of investment. In relation to the priority of improvement the conditions for access to education and training, main difficulties are the poverty and the social isolation, also a big part of the Bulgarian population has no access to information or suffers of lack of motivation. There are difficulties concerned with optimization of the network of professional schools and the network of higher schools too, mainly due to the big resistance on regional level.

The investments in human resources are raised to a national goal and they are one of the strategic directions in the Law of National Budget of the Republic of Bulgaria [8]. The reform in the education sphere with aim to ensure equal access to quality education is engaged with additional investments for adoption of ICT; to embrace the children in student's age by the high school educational system more fully; to promote the Bulgarian participation in national and international programmes and projects; to improve the qualification of the teachers; to improve the energy effectiveness of the Bulgarian schools; to optimize the scholar network; project financing of activities to improve the quality of the higher education. Some conceptual and strategic treatments in this domain are written in the Conception of the Ministry of Labour and Social Policy on LLL in view an improvement of employability and the Strategy on Further Vocational Training in 2005-2010 [9].

2.2. Higher Education

The Bulgarian degree system is a mix between one- and two-tier models – in most of the subjects the first degree is bachelor (usually after 4 years of education) and it ensures access to either master or doctoral studies (Fig. 2). PhD studies last four years after bachelor and three after master. But in certain subjects such as Medicine, Architecture, Law and some foreign language programmes the first university degree is master and the duration of studies is at least 5 years which is the old one-tier model. Due to this ambiguity universities are tempted to have only 5 years master programmes instead of designing new short-term (at least one year) master courses for upgrading the basic bachelor level. This trend is particularly strong in engineering where some universities refuse to implement the new two-tier structure.

Up to 1999 master degree was a prerequisite for admission in PhD programmes. It predetermined the content of the master degree as a scientific degree, something like preliminary to PhD studies. The perception of the master as a specializing degree fitted the inherited specialized and research oriented Higher Education (HE) model. The latter allowed the universities to just re-label their old undergraduate courses without changing their content and to reshape specializations into master programmes. It is clear that such an approach does leave no space for interdisciplinary and pragmatically oriented master programmes. Since 1999 the master degree is not tied to the PhD and this allows more

flexibility in building up a new format of curricula. In this case master studies could belong to a complementary rather identical subject area thus giving more labour opportunities to the graduates. The simple re-labelling or re-packing existing undergraduate programmes does not meet the demands of the rapidly changing economic environment. Development of new curricula or qualitative improvement of existing courses is the only way to elaborate proper educational policies. Without overcoming the attitude of all South-East European academics to train academics but not professionals the introduction of the degrees will only overload the already overloaded existing curricula, which is the case in the region.

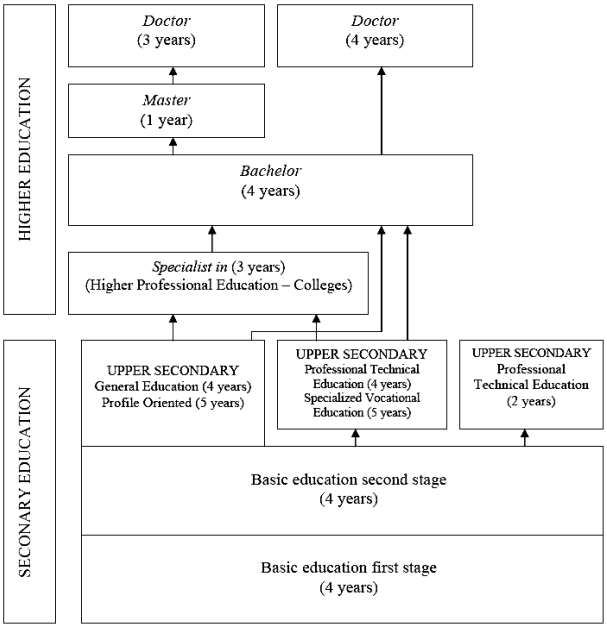

Figure 2. Bulgarian Educational Degree System [10]

In LLL context, the Bulgarian system for higher education offers education for young people mostly in regular form of education. The transition to mass system and system, which offers flexible training models to promote LLL is a premise to assume that the age profile of the students studying in the system of higher education, which now is similar of those of the other soon accessed countries (ACs) in the European Union (EU) will increase approaching the levels of the 16 countries in EU as Germany, and in some degree – United Kingdom. The degree of participation of people 18-23 years old in the higher educational system in 2000 have been about 24%, similar to this of Hungary and Czech Republic, which are the closest by population to Bulgaria. The percentage of people 30-34 years old who have graduated higher education is about 20% [11].

In terms of human resource development in the hi-tech field, Bulgaria does seem to have sustainable conditions and advantages. International competitions among pupils illustrate the level of education in mathematics and hard sciences is at a high

level, and new science and engineering graduates account for 4.75 % of the 20-29 year-old population, putting Bulgaria second highest across the 7 candidate and excandidate countries - Bulgaria, Latvia, Lithuania, Malta, Romania, Slovakia and Turkey [12]. The proportion of tertiary level students in science, maths, computing, engineering, manufacturing, and construction is shown on Fig. 3. Graduates from these subjects are widely recognised as playing a vital in economic growth and prosperity. The EU average proportion of students studying in these subjects is around 25 %, and Bulgaria is approximately at this level. This is a higher level than most of the former ACs, but there is still room for growth towards the higher levels demonstrated in the Czech Republic, Slovakia, and Lithuania.

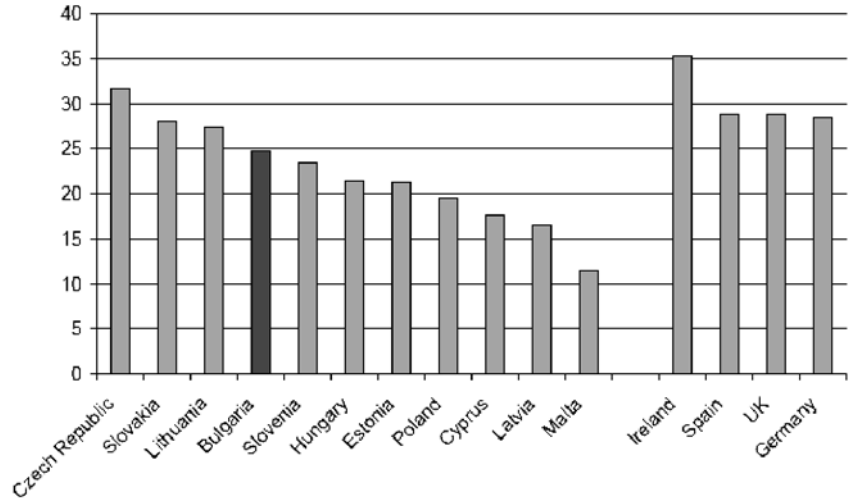

Figure 3. Tertiary level students in science, maths, computing, engineering, manufacturing and construction as a proportion of all tertiary level students, 1999-2000 [13]

3. Care of gifted children

The problem about development of so-called “golden children of the society” (according to Plato) occupies today an important place in the European and, in particular, in the Bulgarian educational area. Up to 1989 a relatively good system for assistance of gifted children existed in Bulgaria. For example, many talented pupils in the technical areas have been covered by the National movement "Technical and scientific creative work of youth". The winners of national and international competitions have been stimulated as they were accepted in appropriate technical universities without entrance exams. Wide known was the International assembly for gifted children "Peace Banner" held regularly in Sofia, etc. Now this system is destroyed.

Children with a high level of intellectual development and special abilities have to be relied on to become a driving force of the entire economic, social and spiritual life. Considering the development of bases for further training since the earliest age, the children’s access to further training is improved by training the teams for complex pedagogic evaluation with the regional inspectorates on education and the teams in the kindergartens and the schools with aim to introduce them in the new requirements and the

evaluation procedure on educational needs of children and students with injuries; developing and introducing individual programmes for training and growth; training and qualification of pedagogical and administrative specialists to work with children with special educational needs in common educational environment; training seminars for qualifying the teachers with the auxiliary schools.

Lately the question about gifted children is being discussed more and more often. The Bulgarian expectations in this area are connected with the creation of a European pedagogical space. In this space the solution of every topical problem to be based on the general European philosophy for a gradual limitation of the differences between the Bulgarian educational system and the educational systems of the developed European countries keeping the national specificities and priorities.

3.1. A variant of strategy for the development of gifted children

To achieve good results in the development of the gifted children it is important to start with training of the pedagogical staff. This is in unison with the task to ensure good conditions for creation of European space for higher education, connected with the support and improvement of its quality, as well as with the purposes of the European Council for High Abilities (ECHA).

Some ideas about a strategy for work with gifted pupils and a variant of training model for student of pedagogy how to identify and develop the gifted children is shown in (Table 1). The variant consists of two modules:

A: Module for an orientation in the existing theories about this problem [14].
B: Module for practical training [15].

The first module is predominated by the strategy for development of gifted pupils based on the humanistic approach by a subject-subjective position towards the others and themselves. Some independent stages in realisation of this strategy, arranged in logical consistence, are suggested:

- A determination of the signs of the gift, the abilities and the talent, characterizing the gifted children.
- An utilisation of adequate methods to identify the gifted and talented pupils including the methods about determination of pupils' interests and their development.
- An application of effective techniques and technologies to educate and develop the gifted children.

The student must acquire reliable methods to diagnose the capabilities, abilities and interests of the children, before applying the best technologies for work with them. For this purpose students must know very well the characteristics of these children, the signs of their gift, abilities and talent. The students receive their orientation in the existing theories about this problem not only by course of lectures, but through individual work as well.

Persons / questions	Parents	Teachers (Tutors)	Pupils
What is preferred?	The parents observe what preferences the children develop at home - to read, to paint, to do sports, to embroider, write verses, to sing, play and compose melodies, to play by electronic games, etc. The parents share this with the teachers; they are interested in the children problems in the school.	The teachers observe what the children love to do in the class and in the school in all forms of their education - to participate in dramatizations, to write verses and short stories, to sing songs, to solve problems, etc. The teachers share this with the parents and inquire whether the children have similar activities at home.	The pupils share with their parents and teachers what they like to do at home, at school, in the centres of work with children. The children ask themselves "What do I want to make?" They do introspection and make conclusions about their interests.
Why it is being preferred?	The parents discuss with the children about the reasons why they choose one and other kind of activity and determine the motives of this - imitate a favourite sportsman, an artiste, a performer; the pleasure obtained by certain kind of activity; a presence of opportunities, talents, abilities of thing, etc.	The teachers hold discussion, inquiry or test for motivation of the children to the preferred activity and determine the cause for that - fortuitously fall because of a friend, for example; imitation of an idols; permanent interest because of definite abilities, etc.	The children ask themselves "Why I love to do this?" and determine the reason - due to transient wish; to be attractive to friends; because of satisfaction of well done work; due to wanting for a manifestation the pre-others because of nature aptitude, etc.
What, how and where to be done?	The parents determine the opportunities for answering the children's interests and they provide conditions for their development - buying the wanted materials and instruments; enrolling them in a circle of interests; invitation of engagement in activities for appearance; trans-shipment (if it is needed) to the point of interest, etc.	The teachers orientate the pupils to definite forms of additional education outside the school according to manifested interests - enrol them in advanced classes or specialised schools; include them in teams for different contests, school Olympiads, etc.	The children show their preferences for engagement in different kinds of activity - enrolment in appropriate circles, schools and sections; entering in different forms for their own manifestation, etc.

Table 1. A variant of a training model for student of pedagogy for identifying of capabilities of gifted children [14].

The students' competence to identify the gifted children and to work with them develops in the second module "B". This module is accomplished in the form of training (in groups or individual), which ensures good conditions for self-perfection

and self-development.

In the variant three series with five meetings in each have been envisaged, whose contents and purposes are adequate to the first module for theoretical investigation of the problem. Different interactive training methods with varied combination of frontal, group or individual forms of education; different variants of questions and tasks, games, cases and tests; different instruments applied in the pedagogical space inquiries, varied individual programs, strategies and technologies; exercises with different level of complexity can be used to include the students in imaginary and real situations of the pedagogical practice and ensure their creative work.

To win students over the cause of "the golden children of the society" it is necessary to work purposefully for their motivation [16].

3. Conclusions:

Based on the issues discussed above the following conclusions can be made:

1. Concerning the vocational education:
   - It is better the choice of profession to be postponed to later age (after X class for example).
   - Vocational training has to be included as obligatory selected subject or self-dependent selected subject in the lower classes, but in manner to give the person a chance later to change the trained profession without additional training.
   - It is necessary to change the role of the teacher (from lector to consultant), which includes training related to novelties in the professional sphere, new teaching methods; work with personnel computer, internet, studying foreign languages.
2. Considering the higher education:
   - There are difficulties with respect to ensure the students access to modern textbooks, manuals, literature and reference base written in the basic languages in EU.
   - It is necessary to improve the traditional system of teaching based on lectures, with aim to give the students the chance to have more self-study, developing their own independent thinking and analytical approach of solving problems and decision making.
   - It is necessary to develop an informational system for control of the higher education and a national academic communication network, connected with the European networks of higher education.
3. Concerning strategy for selection and development of gifted children:
   - In Europe already exist organizations working actively in the European pedagogical area on the problems with gifted children of all ages by development and spreading of information. They expect all pedagogues will use their effective offers to realize a general European model.
   - These organizations use different forms, methods and means which is topical for the Bulgarian pedagogues, too. They give advices to teachers, parents and pedagogical staff and offer concrete instruments to recognise their shortcomings and assets.
   - The strategy for development of gifted children offered by D. Todorina [14] is

adequate to the ideas of the European organisations about the integrative relations between pupils, teachers, parents and institutions and about the instruments and methods for realisation of the main purpose.

- The purpose of the training of the future teachers to identify and develop gifted children depends on the quality of higher education.
- There is a close relation between the philosophy of the European organisations for gifted children of all ages and the Bulgarian experience which keeps the national specificities, but reduces the differences between the Bulgarian educational system and the educational systems in the developed European countries. Therefore we can build together the European pedagogical space giving our common contribution to the competitive power of the European values in the World.

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