mascil
mathematics and science for life

Analysis of the Bulgarian policy context

mathematics and science for life

mascil

mascil aims to promote a widespread implementation of inquiry-based teaching (IBL) in math and science in primary and secondary schools. It connects IBL in schools with the world of work making math and science more meaningful for young European students and motivating their interest in careers in science and technology.

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1.14 National report of Bulgaria

PART 1: A DESCRIPTIVE, EVIDENCE-BASED ACCOUNT OF THE NATIONAL CONTEXT

Introduction: Organization of education in Bulgaria

The main-stream educational system in Bulgaria starts after the nursery institution. In the age 3-6 the children visit the so called “Groups” (numbered, according to age, by numbers from 1 to 4). The first three groups are not obligatory. Group 4 (age 6) is obligatory and is known also under the name “Preparatory group”. Educational stages (called “degrees” in official Bulgarian documents) are: *Basic* and *Secondary*. The Basic stage consists of the first 8 grades (age 7- 14) while the Secondary stage comprises the grades 9 -12 (age 15 – 18). The Basic stage itself is split into two sub-stages: Primary sub-stage including grades 1 to 4 (age 7 – 10) and Pro-gymnasia sub-stage including grades 5th to 8th (age 11 – 14). The following table graphically represents the general educational scheme:

	Educational stages (degrees)											
	Basic stage								Secondary stage			
	Primary sub-stage				Pro-gymnasia sub-stage				Gymnasia stage			
grades	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII

Depending on the grades covered, the schools fall in several categories:

Type of school	Grades covered
Primary school	1 to 4
Elementary school	1 to 8
Secondary general (SOU in Bulgarian)	1 to 12
Gymnasium (Grammar school)	8 (or 9) to 12

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Specialized gymnasiums (with emphasis on languages and/or Mathematics and/or Science)	8 (or 9) to 12
Vocational gymnasiums	8 (or 9) to 12

There are some other schools, for instance, the so called “musical” or “arts schools”. They slightly deviate from this classification. The same refers to the so called “sports” school. More detailed information is contained in the Table from the introductory part of Appendix I. The official document of the Bulgarian Ministry of Education with relevant information is:

НАРЕДБА № 6 от 28.05.2001 г. за разпределение на учебното време за достигане на общообразователния минимум по класове, етапи и степени на образование

Theme 1: State of affairs-recent changes

Wider policy perspectives

Reforms in educational system are periodically introduced and conducted in the last 50 (or more) years. At the moment a new law for the regulation of the entire educational sphere is prepared and discussed (including structure, curriculum and syllabi).

The prioritization of science and mathematics education is expressed through the existence, as an integral part of the general Bulgarian educational system, of gymnasiums specialized in Mathematics or specialized both in Mathematics and Science. These are the so called “Mathematical Gymnasiums” which appeared about 45 years ago. They are present in every big Bulgarian town. To become a student in such a school one has to pass successfully an entrance exam. These schools are the major tool to “keep up” (at least to some extent) the level of Mathematics education in the country. Some of these Mathematical Gymnasiums start looking for higher ability students earlier and form (on

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the base of an entrance exam) classes with increased learning of Mathematics from 5th grade on.

Besides the Mathematical gymnasiums, there are many ordinary gymnasiums which, among others, include also separate specialized classes with emphasis on one of the subjects: Mathematics, Biology, Physics and Chemistry.

The general educational system envisages also the possibility for the students to elect some optional subjects with the aim to deepen the knowledge in a specific area (Mathematics included).

The Information Technologies (IT) is considered to be related to mathematics and is also a priority. This is reflected by the fact that there exists a separate subject IT which is studied optionally (in 1-4 grade) and compulsory (from 5th grade on).

Science and mathematics teachers' education

The now acting regulatory scheme (adopted more than 10 years ago) envisages:

a) The teachers in the kinder garden are not specialized except for those who will teach foreign language.
b) There is a specialty for teachers in the primary school as well as an integrated specialty – for pre-school and primary school teachers. In addition, there are separate specialties for primary teachers with expertise in foreign language, arts and sports.
c) At university level the future teachers could acquire a pedagogical degree in 1, 2 or 3 fields, e.g. biology and chemistry, chemistry and physics, physics and mathematics, mathematics, informatics and ICT (Information and Communication Technologies).
d) The forms being used for training are internships, shadowing a master teacher and pre-diploma-thesis-defense, teaching practice. The care for the newly recruited teachers is left to schools and, in some cases, to the regional educational authorities.
e) After obtaining a bachelor or a master degree in a wide range of specialties, one can apply for additional training in order to obtain teacher qualification.

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In the recent 8 years there has been a retraining of teachers from other fields for acquiring a qualification in ICT. Due to the integration of the subjects of the natural sciences in 5th and 6th grade there goes on an additional education of teachers with a single specialty from the natural sciences, with the aim to become capable of teaching the integrated subject.

The profession of the teacher in Bulgaria, at the moment, is not regarded as highly prestigious (to put it mildly). As a corollary, the best minds rarely decide to become teachers.

Implementation in the classrooms

In the current syllabus the number of hours for mathematics has been reduced on the account of hours for IT which are considered to belong to the same cultural-educational field. In the syllabus under development (in the forthcoming law) the total number of hours for mathematics is the same but the distribution in the years is different. In the secondary stage there are two levels of the mathematics curriculum according to the branch (profile) chosen by the student. It should be noted that the general number of "Mathematics hours" (taken together for grades 1 to 12) is among the lowest in Europe (see page 42 of http://keyconet.eun.org/c/document_library/get_file?uuid=e456b461-d3cd-4bd5-aabc-2cae2d4bfaf9&groupId=11028) .

The number of hours for Science is preserved. Science is an integrated subject in 3th and 4th grade. The subject "Science" in 5th and 6th grade is again integrated but there are separate modules in it devoted to major sciences. The classes are taught by teachers qualified within a special program of the Ministry of Education, complementing what is needed for teaching the integrated subject. Starting from 7th grade the Science is split in separate subjects. In the new curriculum which is under discussion still a minimum of 40% of practical exercises is envisaged. The main problem consist in providing an appropriate equipment and consumables in the labs for conducting these practical exercises - the current status is very bad, a lot of chemistry, biology and physics labs do not function because of the lack of materials and consumables.

The systematic use of active learning methods is not supported at national level. There are however schools and teachers (in Basic and Secondary stage alike) who use active

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learning/teaching on regular basis. Such teachers have been educated and encouraged to use IBL in the frames of a number of European projects, e.g. *InnoMathEd, Fibonacci, DALEST, I*Teach, Weblabs.* Ten such teachers were interviewed in connection with this Report. The results are presented in Appendix II. During the realization of these projects a significant number of educational resources had been developed which are now used in many schools.

The methods of assessment, unfortunately, remain unchanged and tuned to the classical way of teaching and learning mathematics. This is a major obstacle on the way of widely implementing IBL in Bulgarian schools.

Constrains in relation to the aims of the mascil project

The aims of the mascil project are implicitly present in the state educational standards but are not prioritized enough. Although there is understanding among many teachers about the possible gains offered by IBE, although many educational policy makers share and express ideas close to IBE, the latter is not recognized and promoted enough in the official documents.

As mentioned above, one of the obstacles is the assessment. It is, perhaps, necessary for people engaged with IBE to develop not only teaching and learning tools suitable for IBE but to create also assessment tools which reflect the nature of IBE. It is not to expect that people who are strangers for IBE will agree to develop assessment tools for IBE. And it depends mainly on them to introduce these new assessment tools. If we do not help them, there will be great difficulties when attempting to change the ways science and mathematics are assessed and to introduce more widely IBE.

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Theme 2: Schooling and the world of work

Wider policy perspectives

Till 2013 the connection between the general education (the primary and the secondary general education alike) and the world of work has not been a priority of the policy makers in Bulgaria but it becomes a priority for the school year 2013-2014. In the secondary school such a connection is a priority for the professional schools as well as for the specialised classes in the general secondary schools. Currently (and till October 2014) there is a project enabling the students of a concrete specialty to have 240 hours of internships. A Model for partnership "Professional school – Enterprise" has been launched in the scholl year 2013-2014.

On the level of national curriculum the connection between general education and the world of work is indirect – it could be found in some schools subjects, e.g. "*Work and Creativity", "Customs and Technology"* which are studied in regular schools. A more direct connection, elevated in certain sense to a priority, could be observed for the professional schools. Special toolkits have been developed in support of the education quality. Currently there is a discussion how to enhance the connection between general education and the world of work.

Issues regarding schools/institutes

There are various (and separate) vocational schools as well as specialized vocational classes in the frames of the general secondary schools. In addition, there are Mathematics- and Mathematics and Science secondary schools in the bigger towns of the country where in depth learning of Mathematics and Sciences is emphasized.

There is a connection between some professional schools and the corresponding working environment. The connections in the primary and secondary stage of the general schools are indirect – it could be found in some schools subjects, e.g. "*Work and Creativity", "Customs and Technology".*

There are connections between general schools and the providers of informal education. They are initiated both by schools and by the providers of informal education on voluntary base. The prevailing connections are short-term ones. The most active institutions of the

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kind seem to be the museums which show imagination in establishing and maintaining connections with various schools in the country. The same is true for vocational schools.

The general school system and the system of vocational schools work rather independently. As mentioned above, some regular schools include specialized vocational classes. The common feature between the “Vocational” and “General” school systems is that the students in vocational schools or classes cover the same obligatory minimal requirements in the different subjects as the students in the ordinary schools.

Issues regarding classrooms

There are curriculum support materials in the context of specific topics but there exists a room for significant improvement in this direction and we rely greatly on the impact of the mascil project.

The assessment of skills/competences in science and mathematics within the general education is rarely related to the world of work.

Both active and passive learning methods are used in the vocational schools. The teachers are free to choose their method of teaching and we agree with George Polya that *there are as many good ways of teaching as there are good teachers*. This is in harmony with what could be found in an old British manual: “Whatever the subject, what the teacher really teaches is himself.”

The assessment is on the base of written tests and exams. The practical skills are tested on the base of completing a given specific task. There are special state exams for obtaining certificates for professional qualification.

Constrains in relation to the aims of the mascil project

The first constrain seems to be the lack of enough curriculum supporting materials (in terms of suitable educational environments, “manipulatives” for hands-on activities, literature, etc.) which are suitable for application of IBL methods in vocational education. In this respect the Bulgarian mascil team relies on the experience and the good practices of the project partners as well as on the development, within the frame of the Project, of new educational resources tuned to the specifics of vocational schools. Another constrain

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was mentioned above: the necessity to develop assessment tolls suitable for measuring the achievements of vocational school students trained in the style of IBL.

Last but not least: all three levels of educational authorities (school, regional and national) should be convinced in the advantages offered by IBL. Only then the policy makers could agree on the necessary changes.

Theme 3: Science and Mathematics curricula and IBL

Wider policy perspectives

Inquiry Based Learning (IBL) approach is not explicitly pointed as a goal or priority in policy making national documents. Implicitly, however they are recommended as a means for achieving some of the goals of education in the country. Correspondingly, some schools and teachers use these approaches.

Issues regarding schools/institutes

The IBL approaches are used by some schools or individual teacher on their own initiative and the good practices are spread at seminars, conferences, specialized educational journals or materials published in the frames of international educational projects (e.g. InnoMathEd and Fibonacci).

Issues regarding classrooms

There are curriculum support materials on certain topics in science and mathematics education which are in support of the IBL (including educational books and learning environments developed by the Bulgarian mascil team; some of the published articles are listed in the answer of Q3.7 of Appendix I). However there is room for covering a larger content as well as including the vocational schools as a target.

The prevailing existing assessment methods do not promote (and even are obstructive to) the dissemination of the IBL. In extracurricular activities however there is relatively long-term experience in adequate assessing inquiry based projects developed by school students (individually or in small teams) under a scientific guidance. A good example o this is the National competitions in ICT and the activities of the High School Students' Institute known under the abbreviation HSSI (see http://www.math.bas.bg/hssi/).

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Constrains in relation to the aims of the mascil project
See 2.4. above

Theme 4: Pre-Service teacher training in relation to i) IBL and ii)the world of work

Wider policy perspectives
The priority could be ordered as follows:

- Acquiring the basics of the corresponding scientific field;
- Acquiring the necessary elements of Pedagogy, Psychology and relevant Didactics;
- Practice in class.

Implementation
Teachers in Mathematics, IT and Informatics are being educated in the universities of: Sofia, Plovdiv, Blagoevgrad, Veliko Tarnovo, Shumen. Teachers for the Primary school and the Kindergarten are educated in addition to these universities also at the universities of Stara Zagora, Rousse, Burgas, and in the colleges in Pleven and Vratza.

At least a bachelor degree is necessary (4 years) to become a teacher. The structure of education is following the aims as mentioned above:

- Acquiring the basics of the corresponding scientific fields
- Acquiring the necessary elements of Pedagogy, Psychology and relevant Didactics;
- Practice in class.

The people responsible for training prospective teachers are university educators. Some master teachers participate as mentors in the internships. The education duties are assigned by the respective university boards.

Eligible for studying at university are only people with completed secondary school. In order to become a university student, one has to pass an entrance exam. Separate universities conduct separate entrance exams. When applying their documents to the university, the students order their preferences toward science subject (Mathematics,

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Informatics, Physics, Chemistry, Engineering) and professional studies (teacher, Programmer, Engineer). One can become a teacher in the frame of bachelor degree education or in addition to master degree education.

As mentioned above, the connections between general school and WoW are realized in the 4th and 5th year of education, in the frames of internships, shadowing master teachers, pedagogical practice before the defence of the diploma thesis.
Various methods are used, including IBL methods (unfortunately, insufficiently) in pre-service teachers' training. The educators have the freedom of choice. The universities are autonomous.

Teachers' voice
Ten teachers were interviewed. Their answers are compiled in Appendix II and exhibit high level of understanding the philosophy behind IBE. It is a very good reading material. We will present here only some of the answers (at most one answer for each teacher).

Teacher 1. Question 14. (For in-service teachers) Do you implement IBL practices in your classroom? If yes/no why? If yes please give an example.
Answer: *"I use dynamic geometry software in my mathematics classes and during extracurricular "applied art" activities where my students act as young researchers*."

Teacher 2. Question15. (If he/she implements IBL) Have you faced any difficulties while implementing this teaching approach in the classroom? If yes please explain.
Answer: *"The main problem is the lack of an appropriate program (curriculum, syllabus) for the mathematics K-12 education, as well as relevant resources approved by the Ministry of Education. The lack of experience in Inquiry based teaching among my colleagues is also a problem since it seems to them that this approach is not "serious" and requires more efforts due to the lack of precision and systematic delivery of knowledge! In a nut shell – the lack of symbiosis between the classical theoretical approach of accumulating the necessary minimum of knowledge and the opportunity this knowledge to be acquired and assessed by means of the IBL."*

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Teacher 3. Question 16. (if familiar to the approach) Do you think that IBL approach is a well suited approach for the students? If yes in which aspects? If no, why?
Answer: *"I think that the IBL is a necessity for the Bulgarian school since it motivates the students to learn and think, makes them feel part of a team when solving practical problems, shows them ways for exploring and proving mathematical facts, patterns, topics, in general – develops their creativity."*

Teacher 4. Question 10. Would you be interested in participating in teacher training programmes now or in the future? If yes why, what do you want to gain? What is the added value for you? If not, explain the reasons.
Answer: *"I am very interested in attending such programs. The good teachers should:*

- *enter the role of a student so as not to forget the problem of his/her students*
- *Life is very dynamic and I can't afford using outdated teaching methods.*

I expect to be enriched by such programs and to be provided with means enabling me to show my students that mathematics is beautiful! I expect that my students who love mathematics will love it even more and will look for even closer connections with it. And for those "who think they don't like the subject", I hope they will change their mind. My sincere hope is to succeed in this always..."

Teacher 5, Question 15. (If he/she implements IBL) Have you faced any difficulties while implementing this teaching approach in the classroom? If yes please explain.
Answer: *"It might sound strange but I don't face any problems – it is easier for me to work in this style and to observe that my students can apply with a greater ease what they have discovered themselves."*

Teacher 6. Question 14. (For in-service teachers) Do you implement IBL practices in your classroom? If yes/no why? If yes please give an example.
Answer: *"Yes, I implement IBL practices. The most recent examples include sessions during the last 2 years with 9-10 graders. The students investigated via dynamic geometry software special points in triangles and quadrilaterals and the changes of the graph of the quadratic trinomial and formulated interesting known and unknown (to me) conjectures."*

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Teacher 7. Question 10. Would you be interested in participating in teacher training programmes now or in the future? If yes why, what do you want to gain? What is the added value for you? If not, explain the reasons.
Answer: *"Yes, the education should be upgraded dynamically. Implementing the ICT changes the teaching methods. The students like the variety and the novelties and could be stimulated for various activities helping them to learn new matters or to apply in new situations something they have already studied."*

Constrains in relation to the aims of the mascil project
The selection of "multipliers" will be based mainly on participation in previous projects with emphasis on IBL and on good practices demonstrated and presented at seminars, conferences and in specialized journals. Several teachers from vocational schools will be also invited based on their performance in previous long-term qualification courses.

The major challenge and a threat for the mascil project will be the work of a "multiplier" in the environment of a relatively small school where there are not many teachers teaching the same subject. There would be nobody else to transmit the IBL know-how to. Then the IBL approaches will have to be transmitted to other subject teachers and this is not an easy task because the "multiplier" is not aware of the corresponding supporting materials. As an alternative, one can organize training courses on a town level, with teachers from different schools (but teaching one and the same subject).

Theme 5: In-Service teacher training in relation to i) IBL and ii)the world of work

Wider policy perspectives
Currently a 5-degree scale for professional development of teachers in Bulgaria is established.
The requirements are as follows:

- At least 4 years in-service for the 5th (the lowest) degree
- At least 1 year of teaching after getting a specific degree for obtaining the next degree

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The teacher education lasts as follows:
For 3d degree - one year (the training is lead during the weekends and the holidays).
For the rest of the degrees – there are 1-2 days trainings, after which the teachers work on their own and are consulted when needed.
For 5th and 4th degrees the “independent work” lasts about 1-2 months before the final exam.
For 1st and 2d degree there is a course work in the form of a thesis, to be defended (usually after 1-2 years of development). For the highest (1st) degree publications are also required.
Variety of short and long term qualification courses are offered for teachers who are participating in this Professional development scheme.

There are no special provisions for newly recruited teachers. Some changes in this direction are discussed to be included in the new law.

Implementation
The professional development of teachers is voluntary. There are incentives related to the salaries (the changes in the salaries do not depend on the educational level – primary, secondary).

Three educational departments are accredited for delivering professional development (qualification) degrees to the teachers – in Sofia, Stara Zagora and Varna. Additional teacher training initiatives are offered by other institutions, including the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences. Trainings have been carried out in the frames of several educational projects of the Ministry of the Education.

The professional development courses vary from short term (1-3 days) till 1 year (in order to obtain a professional qualification degree). As mentioned above, the latter are conducted without taking a leave from the school, i.e. this kind of education is accomplished in the weekends, the holidays and by means of distance learning. In this case the respective teacher is required to present an individual research project and to have articles published in a specialized journal.

The topics connecting school and the world of work in the professional development of teachers are rather episodic. They depend on the personal preference of the teacher

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educator. Although such connections are not included in the official requirements there is a general understanding that a closer connection between school and the world of work will enhance the motivation of the students to learn.

Teachers' voice

The opinions of the ten interviewed teachers are gathered in Appendix II. They show a very good understanding of the role and place of teachers' professional development. We give here a sample with the opinions of three teachers.

Teacher 8. Question 20. (for in-service) Do the Curriculum materials support you in connecting the topic that you teach with the world of work? If not what is missing? If yes, how?

Answer: "*To a great extent the curriculum materials do not support the connection between the topic I teach and the WoW. What is missing is the practical applicability. Everything depends a lot on the methods of teaching but the main reason for the lack of students' motivation in learning is that they do not see the use of what has been taught to them."*

Teacher 9. Question 10. Would you be interested in participating in teacher training programmes now or in the future? If yes why, what do you want to gain? What is the added value for you? If not, explain the reasons.

Answer: "*As a young teacher I am not only interested in programs for professional development but I strongly feel the need of such programs. Currently the most precious effect of teacher training programs would be the ability of reaching a larger circle of students, i.e. to be able to intrigue and motivate them so that they work with interest and by their own wish."*

Teacher 10. Question 19. Do you think that connecting teaching subject to the world of work is only relevant to vocational education or also to general education? Please explain.

Answer: "*Due to the fast development of ICT it is necessary to connect each school with the WoW. For instance, the modules: database, electronic sheets, word processing, graphic design, web programming, the notion of programming and the development of small programs, networking, information search, distance learning, etc. should be extended."*

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Constrains in relation to the aims of the mascil project

The National Advisory Board will be used to facilitate the connection between the team members, the teachers and the WoW. We shall identify topics relevant to the WoW in BG and will adapt partners' topics for the purpose.

PART 2: EMERGING ISSUES FOR REFLECTION

Equity specific issues

Gender specific issues are not prioritized in policy making documents and in the national curriculum in Bulgaria. As a matter of fact, there are no such issues. There are approximately twice as many female mathematics teachers as the male teachers.

There are no statistically significant differences between the mathematics results shown by the girls and the boys in the group of students having participated in PISA study. The average score of the girls is 500,65, and that of the boys – 498,85. The differences in the percentage distribution of the average score in the two groups in the different levels (low, medium and high) are not statistically significant either as it could be seen by the following table:

	Girls		**Boys**	
	Percentage	**Score**	**Percentage**	**Score**
1st level	49%	373,84	51%	365,44
2nd level	54%	515,51	46%	513,13
3d level	47%	657,94	53%	662,98
Total	52%	500, 65	48%	498,85

The largest part of the girls (54%) perform at second level and the smallest (47%) – at 3d level, whereas the largest part of the boys (53%) perform at 3d level and the smallest (46%) – at 3d level.

A more detailed analysis of the results at 1st and 3d level presented in the next table shows that there are significant differences between the achievements of the boys and the girls at the 1st and the 3d level – with the lowest and the highest scores. The boys are prevailing in both of groups:

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	Score	Number of students	Girls		Boys	
			Percentage	Number	Percentage	Score
1st level	Up to 379	182	42%	76	58%	106
	380-423	120	56%	67	44%	53
3d level	624-669	100	52%	52	48%	48
	Above 670	63	40%	25	60%	38

The data compared to the data of the national assessment show that at this age no statistically significant difference has been detected between the scores of girls and boys. The average score of the girls during the last 4 years is slightly above the average of all students, ant that of the boys – slightly below the average. Such a tendency is observed at all the stages of PISA, i.e. the 15-16-year old girls perform slightly better than the boys. It is important to emphasise this since Bulgaria is one of the few countries in the world in which the girls tend to outperform the boys at mathematics competencies.

Addressing low achievement

There is a national program for working with low achieving students (in all subjects). The name of the project "*School with two speeds"* speaks about itself. It is coordinated by the Ministry of Education. More information can be found at: http://www.minedu.government.bg/news-home/2011/11-08-26_nobell.html .

Since reducing the number of low achieving students at school age is an important indicator according to the Lisbon strategy, it is one of the priorities not only for the *Development of Human Resources* program, but also in the program of the government for *European development of Republic of Bulgaria* as well as in the *Program for development of the education, science and the youth policies in Republic of Bulgaria (2009-2013).*

One of the main reasons for dropping out from the school system is that the corresponding student is far behind the rest of the students in acquiring the curriculum. Other reasons include poverty, early marriages among the Roma population, etc. The activities envisaged by the project to face this problem were directed towards:

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- reducing the risk of early dropping of the educational system of children of the pre-school and primary school
- development of packages of measures in support of children with risk of early dropping of the educational system due to learning difficulties

As a tool to achieve these goals, groups of not less than three and not more than eight children (in the kindergarten and in the schools) for additional training are being formed. The admission to these groups is based on the following criteria:

- The language spoken in the family is not Bulgarian
- There is not family support (lack of parental control; lack of parental interest and care; Often absence of the parents; parental education lower than the basic one; financial problems, etc.)
- educational problems (low achieving, learning/behavioral problems – this criterion is not applicable to the children of the preparatory classes).
- irregular attendance of school or of the preparatory classes/groups
- entering school without having attended the preparatory classes/groups
- children from combined classes or mixed age groups

The evaluation of the project results is envisaged to be done by means of qualitative and quantitative indicators. Here are some data concerning the qualitative results:

- Number of children/students embraced by the project was – 7 305 (the planned indicator being 2000)
- Number of programs being developed in support of children/students - over 1344 (the planned indicator being 450)
- Number of children/students included in the information system for following those who have dropped of the school system or are in danger of dropping – 6 295. (information taken from http://www.nobell.bg/)

Promoting entrepreneurship

There are no reliable sources for estimation of the percentage of individuals who have the appropriate skills to start a business in Bulgaria. It is clear however that the IBL could significantly enhance the development of entrepreneurial skills from an early age. This idea should be used more intensively while promoting IBL in Bulgarian schools because

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the very nature of IBL is related to the discovery of opportunities and investigation of different options.

Currently, there is a subject *Entrepreneurship* in both vocational and non-vocational schools. In the new educational law (discussed but still not adopted at the moment) it is envisaged to have four options for studying Entrepreneurship all over the educational period (from Kinder garden to grade 12): as a component in an integrated curriculum, in the electable classes which are compulsory or with free choice, and in the classes of the class mentor. The goal is to introduce specific professions to the children which they could choose in the future. The children will be challenged to solve problems and take initiatives – skills necessary for the future entrepreneurs.

The schools will make their own curriculum for the entrepreneurship education. This is an important step towards decentralization of the school system, towards the school autonomy existent in the whole world. It was reported in the media that the students having undergone entrepreneurship education in 2010/2011 are twice more than those in 2009/2010 (http://www.dnes.bg/obshtestvo/2011/11/14/chas-po-predpriemachestvo-ot-detskata-gradina-do-12-i-klas.133892).

Comments by the NAB

The information contained in this report was collected with the help of some of the NAB members. The opinions expressed in this report were discussed face-to-face with the members of NAB on individual basis.

A formal meeting of NAB will be organized in the first half of October in connection with the adoption of the P1-Interim Report (which is due on October 15th). At the same meeting the current report (and an eventual feed-back from WP2 leadership) will be presented and discussed as well.

The project mascil has received funding from the European Union
Seventh Framework Programme (FP7/2013-2017) under grant agreement n° 320693.
SEVENTH FRAMEWORK PROGRAMME

mascil
mathematics and science for life

Project Information
Project no. 320693
Project acronym: mascil
Start date of project: 01/01/2013
Duration: 48 months
Project title:

mathematics and science for life

Dissemination level
Thematic Priority: Science in Society
Funding scheme: FP7

Information about the deliverable
Deliverable N° 2.1
Due date of deliverable: Month 9
Actual submission date: 04/10/2014
Deliverable title:

Analysis of the Bulgarian policy context

Excerpt from the Deliverable No. 2.1 "National working papers on analysis of policy context"

Contact Information
Coordinator: University of Education Freiburg, Prof. Dr. Katja Maaß
Lead partner for this deliverable: Foundation for Research and Technology, Dr. Kathy Kikis-Papadakis
Website: www.mascil-project.eu

The project mascil has received funding from the European Union
Seventh Framework Programme (FP7/2013-2017) under grant agreement n° 320693.