



CEDEFOP

European Centre for the Development
of Vocational Training



Lifelong Learning Programme

Study visit group report

Group No	224
Title of the visit	Development of key competences in mathematics and science
Topic	Learning mathematics and science
City, country	Sofia, Bulgaria
Type of visit	General education
Dates of visit	11 - 15/3/2013
Group reporter	Justin Kerr, Northern Ireland

I FINDINGS

This section summarises the findings of the group while visiting host institutions, discussing issues with the hosts and within the group. You will be reflecting on what you learnt every day. But to put them together and give an overall picture, you need to devote a special session to prepare the final report on the last day of the visit.

In this section, it is important that you describe not only things you learnt about the host country but also what you learnt about the countries represented by group members.

1. One of the objectives of the study visits programme is to exchange examples of good practice among hosts and participants. Cedefop will select well-described projects/programmes/initiatives and disseminate them to former participants and a wider public, including potential partners for future projects. Therefore it is important that you identify and describe all aspects that, in your view, make these projects/programmes/initiatives successful and worth exploring.

The study visit was very successful and provided excellent knowledge, experience and networking opportunities with various other regions throughout Europe. Aside from the host country of Bulgaria there were representatives present from Portugal, Belgium, Slovenia, Germany (two regions), Malta, Cyprus, Norway and Northern Ireland.

The presentations from the participants on the first day of the visit provided a good background knowledge of the key priorities of each country, afforded the opportunity to engage in conversation and raise questions with peers. This theme continued throughout the study visit and all participants actively participated in regular and meaningful discussions with each other. This was

an excellent knowledge transfer mechanism and the most successful aspect of the study visit.

The group received presentations from and visited several educational institutions throughout the visit. It quickly became apparent that the various competitions, especially the 'Olympics', are extremely important in the host country. The group was given the opportunity to witness a class preparing for the 'Maths Olympics' competition. Although the majority of the participants countries also enter these competitions there is not the same emphasis placed upon it.

It was also interesting for the group to see that in the 107 Primary School additional maths classes are offered for more gifted students especially for those participating in competitions. All students are given the opportunity to stay in school in the afternoon for additional studies. As the visit concentrated on working towards competitions the group was unable to observe any classes dedicated to less gifted students. It was felt that this would have enhanced the study visit further.

The group visited *National Science and Mathematics High School*, a secondary school specialized in Science and Mathematics. Participants don't have such specialized schools in their countries.

The group also visited 97 High School, who had forged an agreement with one of the local universities to allow Tourism students to gain entry without completing a final exam. Students also spend a longer time in this school as they attend from pre-school to the 12th Grade. It is not common however for schools and universities to have agreements on entry requirements.

Describe each of the good practices you learnt about during the visit (both from the hosts and from one another) indicating the following:

title of the project/programme /initiative	country	name of the institution that implements it (if possible, provide a website)	contact person (if possible) who presented the programme to the group	whom the project/ programme/ initiative addresses	what features of the project/programme/initiative make it an example of good practice
Work with talented children	Malta, Slovenia	CMeLD (Malta); National agency for education (Slovenia)			Responsibility for working with talented children rests with individual schools in Slovenia, but it is compulsory to work with them in every school; gifted and talented activities in Maths organised by the Maths Education department in Malta
Support for students with difficulties in Maths	Malta, Slovenia, Cyprus, Germany, Belgium, Norway, Bulgaria, Northern Ireland, Portugal				All the countries listed offer additional support (specific to the schools represented on the group). Examples include, additional support available in Norway for those students experiencing difficulties in Maths from age 15; More experienced pupils help other pupils in various subjects after school in Bavaria, Germany; In Slovenia past pupils also return to the school to offer support to other students;
Maths Olympics	Malta, Slovenia, Cyprus, Germany, Belgium, Norway, Bulgaria, Northern Ireland, Portugal				Examples include Bulgaria, who offer summer camps for those students who have qualified for international Olympics. Free camps also available in Maths in Slovenia for the top achieving students in 9 th grade

* You can describe as many good practices as you find necessary. You can add rows to the table.

2. The study visits programme aims to promote and support policy development and cooperation in lifelong learning. That is why it is important to know what you learnt about such policies and their implementation during your visit. You are invited to describe your findings concerning the following:

2.1 APPROACHES TAKEN BY PARTICIPATING COUNTRIES (BOTH HOST AND PARTICIPANTS') REGARDING THE THEME OF THE VISIT. ARE THERE ANY SIMILAR APPROACHES/MEASURES IN PARTICIPATING COUNTRIES? WHAT ASPECTS ARE SIMILAR AND WHY? WHAT ASPECTS ARE DIFFERENT AND WHY?

All the countries participating in the study visit offer various levels of support for students with difficulties in maths. The countries involved were Portugal, Belgium, Slovenia, Germany, Malta, Cyprus, Norway and Northern Ireland. Although there is evidence that this type of support is available in the host country the group were not able to observe this during the study visit. In Bavaria, Germany, for example, older pupils offer support to their younger counterparts. In Slovenia past pupils return to offer support to current pupils.

Several of the participating countries also offer additional support for those who are gifted in maths, including Slovenia and Malta. In Malta, for example, gifted and talented activities are organised by the Maths Education Department.

All the participating countries, including the host country, also offer support for pupils taking part in national and international prestigious competitions. Competitions include the Maths Olympics. The host country, for example, offer summer camps for those who have qualified for the international stage of the competition.

Throughout the week various useful discussions also took place between all members of the group regarding the specifics of education in each country. Similarities and differences in age group, structure, subject, curriculum, examinations, school size, priorities and policies were discussed continually.

2.2 CHALLENGES FACED BY PARTICIPATING COUNTRIES (INCLUDING HOST) IN THEIR EFFORTS TO IMPLEMENT POLICIES RELATED TO THE THEME OF THE VISIT. WHAT ARE THE CHALLENGES? ARE THEY COMMON CHALLENGES? IF SO, WHY? IF NOT, WHY NOT?

The group felt that the support of talented pupils received in the establishments in Bulgaria was impressive and that this would be useful to adopt in participants' countries.

The lessons that the pupils and students received in the host country, that the group witnessed, did not appear to explore the assessment of real life problems. It was felt that this could be beneficially explored.

The group received a presentation from Kiril Bankov of the University of Sofia. He outlined problems being experienced with teacher training and quota. Participants noticed that University entry requirements and course programme vary from one country to another. Profs. Bankov stated that most students wished to enrol on IT courses but that there were limited

quota. Some students were therefore enrolling on Maths courses as second choice and were not ultimately seeking employment as a Maths teacher.

The host country also displayed great enthusiasm for encouraging students to take part in national and international competitions, but the group would have benefited from observing the support offered to less gifted students. The host country did not appear to have clear career paths mapped out for students and pupils, who also seemed unaware of how their subject choice could influence employment opportunity. When prompted, very few students had clear ideas of career progression.

2.3 NAME AND DESCRIBE EFFECTIVE AND INNOVATIVE SOLUTIONS YOU HAVE IDENTIFIED THAT PARTICIPATING COUNTRIES (BOTH HOST AND PARTICIPANTS) APPLY TO ADDRESS THE CHALLENGES MENTIONED IN QUESTION 2.2. PLEASE MENTION SPECIFIC COUNTRY EXAMPLES.

Support of talented pupils appeared to be very impressive in the host country. The participants from the other countries felt that some of these ideas and principals could be applied in their own areas.

Real life problems did not appear to be used in the host country during lessons. The group believed that this should be applied to make study more informative and relevant.

In the host country, the group heard evidence that there are problems with numbers undertaking Maths teacher training. A significant number of those studying this course do not end up in this profession. It was felt that the numbers should be reduced and channelled into other STEM subject courses.

The host country did not appear, from the evidence displayed during the study visit, to offer extensive support for less gifted students. The examples displayed in Germany and Slovenia could be adopted in Bulgaria, such as older pupils mentoring their younger counterparts.

2.4 ASSESSMENT OF THE TRANSFERABILITY OF POLICIES AND PRACTICES. COULD ANY EXAMPLES OF GOOD PRACTICE PRESENTED IN THIS REPORT BE APPLIED AND TRANSFERRED TO OTHER COUNTRIES? IF SO, WHY? IF NOT, WHY NOT?

Introduction of subject competitions - Not all of the participant's countries offer local competitions in different subjects to their pupils. It was felt that this was good practice and stimulating for pupils and could be applied to success in other regions.

Support for talented pupils - the host country placed great emphasis on developing their most gifted students and it was felt that this could also be applied in other countries.

3. Creating networks of experts, building partnerships for future projects is another important objective of the study visit programme.

Please state whether and which ideas for future cooperation have evolved during meetings and discussions.

During meetings and discussions the following areas evolved as ideas for future cooperation:

KeyCoNet - This is a European policy network on key competencies in school education and several participants expressed an interest in joining the scheme. Cf. <http://keyconet.eun.org/>

School partnerships - several participants showed willingness to create partnerships between their respective educational institutions in the future.

Networking - All members of the group will continue to communicate and share ideas via email together in the future.

TO SUM UP

4. What is the most interesting/useful information that the group believes should be communicated to others? To whom, do you think, this information will be of most interest?

The networking and input provided between group participants was the most positive and useful aspect of the study visit. These contacts can be utilised in the future and passed on to other colleagues in each country.

THANK YOU!