

## ACTIVITIES AND PROGRAMMES FOR GIFTED STUDENTS

The more than 120 participants from at least 36 countries attested to the great interest in this topic. At least ninety attended each of the four sessions.

1. There are a number of aspects involved in looking at programs for gifted students. The first task is to consider the characteristics of giftedness and how such students can be identified. A few papers touched on this area.

Brenda Bicknell (New Zealand), *Addressing mathematical promise in the New Zealand context*

Bettina Dahl (Norway), *How do gifted students become successful? A study in learning styles*

George Gotoh (Japan), *The quality of reasoning in the problem solving process*

Djordje Kadijevich and Zora Krnjaic (Serbia and Montenegro), *Is cognitive style related to the link between procedural and conceptual mathematical knowledge?*

Borislav Lazarov (Bulgaria), *Resulting effect of consecutive activities*

Hye Sook Park, Kyoo-Hong Park (Korea), *Analysis of the mathematical disposition of the mathematically gifted students in the middle school of Korea*

Emiliya Velikova, Svetoslav Bilchev and Marga Georgieva (Bulgaria), *Identifying of creative-productive gifted students in mathematics*

2. Having identified the group of gifted students, it is now necessary to consider how such students should be handled both inside and outside of the classroom.

(a) Some of the presenters looked at classroom settings.

Carmel M. Diezmann and James J. Watters (Australia), *Challenge and connectedness in the mathematics classroom: using lateral strategies with gifted elementary students*

Victor Freiman (Canada), *Mathematical giftedness in early grades: challenging situation approach*

Elena Koublanova (USA), *Teaching capable students in developmental mathematics classes*

Mark Saul (United States): *The unity of mathematics education*

Bharath Sriraman (United States): *Differentiating mathematics via use of novel combinatorial problem solving situations: a model for heterogeneous mathematics classrooms*

(b) Others looked at other settings. These might involve the use of contests, journals or special classes, or even, institutions devoted specifically to gifted students.

Mariam Amit and Alexei Belov (Israel and Russia), *Unlocking interlocking mathematical structures - an experiment at the Kidmatika Math Club*

Dace Bonka and Agnis Andzans (Latvia), *General methods in junior contests: successes and challenges*

Anatolii Chasovskikh and Yuri Shestopalov (Russia), *The Advanced Education and Science Centre of the M.V. Lomonosov Moscow State University - the Kolmogorov College*

Ziva Deutsch, Akiva Kadari and Thierry Dana-Picard (Israel), *"Alef Efes": Students create and publish a mathematical quarterly and an interactive site*

Donco Dimovski (Macedonia), *Mathematical schools, competitions and publications for primary and secondary school students in Macedonia*

Kathy Gavin and Linda Sheffield (USA), *Project M<sup>3</sup>: Mentoring mathematical minds*

Kyoko Kakihana and Suteo Kimura (Japan), *Activities in new curriculum for gifted students - trials in super science high schools in Japan*

Peter Kortesi (Hungary), *Self made mathematics*

Kang Sup Lee, Dong Jou Hwang and Woo Shik Lee (Korea), *Development of enrichment programs for the mathematically gifted: focussed on conic sections*

Elena Levit, Larisa Marcu and Orna Schneiderman (Israel), *Process of training and admission to a MOFET science class*

Gregory Makrides, Emiliya Velikova and partners (Europe), *European project: MATHEU - identification, motivation and support of methemathical talents in European schools*

Eugenia Meletea (Greece), *Educational network communicating heuristic and sophisticated mental models of mathematical knowledge - developing pedagogical reasoning to support gifted/talented students in Greece*

Dimitris V. Papanagiotakis and Panayiotis M. Vlamos (Greece), *Web-based mathematical problem solving database for gifted students publications for primary and secondary school students in Macedonia*

Emiliya Velikova (Bulgaria), *Extracurricular work with creative-productive gifted students - program and activities*

3. The speakers then considered material that was put before gifted students, and discussed in particular, technology that might be of use.

Alexandr and Vladimir Chumak (Ukraine): *Algorithms and symbol-graphic language in mathematics education and using of last in internet technologies*

Hanhyuk Cho, Hyuk Han, Manyong Jin, Hwakyung Kim and Minho Song (Korea), *Designing a microworld: activities and programs for gifted students and enhancing mathematical creativity*

4. Finally, we looked at specific examples of problems and investigations.

Andrejs Cibulis and Ilze France (Latvia): *Work with gifted students in the investigations of polyforms*

Alexander Soifer (United States): *One beautiful Olympiad problem: chess  $7 \times 7$*

Sang-Gu Lee (Korea), *Activity of a gifted student who found a linear algebraic solution to the Blackout puzzle*

5. There were some contributions that were not part of the oral program, but which were included in the written proceedings.

Oscar Joao Abdounir (Brazil), *Music and mathematics: relationships between intervals and ratios in mathematics education*

Alex Friedlander (Israel), *High-ability students in regular heterogeneous classes*

Risto Malcevski and Valentina Gogovska (Macedonia), *The role of educational methods in the teaching of gifted and talented students*

Nobuaki Kawasaki (Japan), *Characteristics of Bulgarian mathematical education*

All the speakers cooperated by giving well-prepared and brief talks so that there was about an hour available in the final session for general discussion.

The program was organized by a committee consisting of the two chairmen indicated below along with Alex Friedlander of the Weizmann Institute of Science in Rehovot, Israel, Shailesh Shirali of the Rishi Valley School in Rishi Valley, India and Emiliya Velikova of the Centre of Applied Mathematics and Informatics, Faculty of Education at the Univesity of Rousse in Bulgaria. The committee is particularly indebted to Dr.

Velikova for setting up the website for the study group, preparing and publishing along with Dace Bonka, Lasma Strazdina and Inese Berzina a volume of Proceedings (supported by the Universities of Latvia and Rouse), presenting the speakers with certificates of participation and providing pens to the attendees.

We hope that participants and others will continue the discussion. To this end, all are invited to surf the website of the topic group at [www.icme-10.com](http://www.icme-10.com), where, in particular, they will find the names and email addresses of those who attended the sessions.

Chairmen: Edward Barbeau, Department of Mathematics, University of Toronto, Canada  
Hyunyoung Shin, Department of Mathematics Education, Korea National University of Education, Korea