TSG 3
MATHEMATICS EDUCATION FOR GIFTED STUDENTS

The Organizing Team

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Introduction to the TSG 3

The goal of this TSG is to promote research and practice in the field of mathematical ability, mathematical potential and giftedness. We intend to involve educational researchers, research mathematicians, mathematics teachers, teacher educators, curriculum designers, doctoral students, and others in a forum for exchanging insights related to the research and practice in the field of mathematics education in order to contribute to the development of our understanding of the nature and nurture of high mathematical ability in individuals.

Following previous discussions on mathematics education for gifted children within previous ICMEs' TSGs, we will continue the international exchange of ideas related to research on identification of mathematical talent, didactics of teaching highly able students, as well as the promotion of mathematical challenge and enrichment for all.

The focal topics will include empirical, theoretical and methodological issues related to the themes below. Discussions will aim at better understanding of:

(a) useful tools for identifying and assessing mathematically gifted students;

(b) the educational approaches and organizational settings more effective for training gifted individual students or groups of students of various ages;

(c) the nature of mathematical tasks and activities that are challenging, free of routine, inquiry-based, and rich in authentic mathematical problem solving and posing;

(d) the relationship between exceptional mathematical abilities, motivation and mathematical creativity; the relationship between mathematics education for the gifted and equity of education

for all students;

(e) teacher education aimed at mathematics teaching that encourages and promotes mathematical talents, and the development of interdisciplinary programs (STEM included), for gifted students;

(f) the relationship between mathematics education for gifted students and the talent development in the areas that are important in the future, such as artificial intelligence, genetic technology, computational thinking, big data, cryptocurrencies, etc.

Main references

Topical Survey:

Singer, F.M., Sheffield, L., Freiman, V. & Brandl, M. (2016). *Research On and Activities For Mathematically Gifted Students.* Springer Nature. ISBN: 978-3-319-39449-7;
http://www.springer.com/us/book/9783319394497

ICME13 Monograph:

Singer, F.M. (2018 ed). *Mathematical Creativity and Mathematical Giftedness. Enhancing Creative Capacities in Mathematically Promising Students*, Springer Nature, ISBN: 978-3-319-73155-1;
https://link.springer.com/book/10.1007/978-3-319-73156-8