HOW DOES MATHEMATICS EDUCATION EVOLVE IN THE DIGITAL ERA? DISCUSSING A VISION FOR MATHEMATICS EDUCATION

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Short description of the Discussion Group: aims and underlying ideas

With this discussion group we hope to create synergies and produce ideas on how to improve mathematics education. The general questions may be: Is how we are teaching mathematics in school good enough? Is the kind of mathematics students are learning in schools the right kind? What is the mathematical literacy for the 21st century? How are mathematical and digital literacies connected? What is the literacy (or literacies) for the 21st century? Specific topics cover different areas that participants proposed as crucial aspects of mathematical literacy, for example: Financial literacy is needed in life, but what does it entail? What topics are not now being emphasized and what topics now taught will become obsolete? Can mathematics courses be made more exciting, to attract more students? How are the new technologies (e.g., the Internet, games, calculators, LMS, software) changing WHAT and HOW we teach and learn? Do they make obsolete the need for traditional manipulative skills? Do they create new opportunities for deeper understanding and problem-solving skills? Is the ability to problem solve necessary when we have devices that help us do things and that connect us with others who know better (or who may have answers)? What is considered as problem solving in the 21st century? Are mathematics educators ready to be challenged by the large-scale computing, big data, stochastic modelling, and crowd sourcing?

Planned structure:

Tuesday, 16.30-18.00: Planned timeline	Topic	Material / Working format / presenter
16.30-16.35 (5min)	Introduction: What are the new types of literacies that are relevant to mathematics education?	Text/ Lecture/Dragana Martinovic
16.35-16.50 (15 min)	Financial literacy and mathematics education	Text/ Lecture/ Annie Savard
16.50-17.05 (15 min)	Digital literacy and mathematics education: Re-considering geometry in the digital era	Text/ Lecture/ Seida Birni & Zekeriya Karadag

17.05-17.20 (15 min)	Problem solving and mathematics education in the digital era	Text/ Lecture/ Eleonora Faggiano
17.20-17.50 (30 min)	Discussion among participants	Notes/ Discussion/ Small groups, then the whole group
17.50-18.00 (10 min)	Summary of the first day	Notes/ Lecture/ Dragana Martinovic

Friday, 16.30-18.00: Planned timeline	Topic	Material / Working format / presenter
16.30-16.35 (5 min)	Introduction: The 21st century learning skills	Text/ Lecture/ Viktor Freiman
16.35-16.50 (15 min)	'Soft' skills and mathematics education in the digital era	Text/ Lecture/ Allen Leung & Anna Baccaglini-Frank
16.50-17.05 (15 min)	Creative and critical thinking in technology-rich environments	Text/ Lecture/ Antonella Montone
17.05-17.20 (15 min)	Collaborative learning with technology	Text/ Lecture/ Thomas Lowrie or Dragana Martinovic
17.20-17.50 (30 min)	Discussion among participants	Notes/ Discussion/ Small groups, then the whole group
17.50-18.00 (10 min)	Summary of the second day and next steps	Notes/ Lecture/ Dragana Martinovic & Viktor Freiman

References-contribution to the DG

Birni, S., & Karadag, Z. (2016). Re-considering Geometry in the Digital Era.

Savard, A. (2016). Teaching Mathematics Using Digital Tools in Financial Contexts: What is the knowledge to be learnt?

Surynková, P. (2016). Insights into Computer-aided Education of Geometry (at Czech colleges).