

# Report from Working Group 2: Changes in People's Conceptions About Mathematics

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## Discussions at CIEAEM 57:

- Who?**
- Teachers
  - Students
  - Parents/Guardians
  - Business/Industry
  - Politician/Bureaucrats
  - Mathematicians [culture]
- What?**
- “hidden values” of mathematical culture
  - democratisation [mathematics for all vs. mathematics for élite]
  - school, university, vocational, .... mathematics/statistics for:
    - the workplace
    - citizenship
- Why?**
- Political changes [e.g., in Eastern Europe: Zhouf, Karp, Regecová]
  - Immigration [cf., Amit]
  - Workplace changes [FitzSimons, Pertechino et al.]
- How?**
- Curriculum [Vermette & Gattuso, Regecová, Sajka ]
  - Didactics [Hanušová, Pertechino et al.]
  - Assessment [Zhouf]
  - Teacher change [e.g., philosophy, psychology, ...]
  - Initial and continuing teacher development [Hanušová, Sajka]
  - Textbooks
  - Other multimedia resources [cf., Arzarello, Barra]
  - Observation of students' cognitive processes & affective domain [Karp]
  - Inclusion of an activity approach to teaching mathematics, including teacher development [Hanušová]
  - Adequate time allowance for teacher development
  - Teaching for reflexivity
  - Participation at conferences such as this one.

## **Preparation for CIEAEM 58:**

- Who?**
- Teachers
  - Students
  - Parents/Guardians
  - Business/Industry
  - Politician/Bureaucrats
  - Mathematicians [culture]
- What?**
- What exactly are “hidden values”? Elaborate [NB importance of beliefs]
  - What are the goals of European/global mathematics education, and who should decide?
  - What are the possible impacts/consequences of:
    - globalisation?
    - greater access by students to information via new technologies?
    - students’ new questioning approaches?
    - access to multimedia in teaching?
- Why?**
- Lifelong learning is necessary. How do we prepare students for this? [cf., Vergnaud]
  - Students can access information from many sources. How can we develop students’ skills of discrimination with respect to mathematics education?
  - Students are often more adept and more comfortable with IT than their teachers. How can teachers make optimal use of this?
  - How can we address the increasing importance of visualisation skills and inductive thinking associated with automation?
  - Workplaces are changing rapidly. How can we encourage more shared understandings between teachers and employers?
  - How might we prepare students for survival in changing economic circumstances.
- How?**
- Innovative teacher preparation [cf., Cerquetti-Aberkane]
  - Innovative curriculum
  - Innovative pedagogy [NB creativity, sense-making]
  - Innovative assessment
  - Innovative resources [textbooks & other multimedia]
  - BUT mathematics for all does not imply a lowering of standards.