The discussion document for the ICMI Comparative Study refers to the role of ICT in Mathematics Education as an important issue under several aspects.

The Preamble notes the influences on the teacher-students relationship and asks that new roles for both the teachers and learners must be defined. Section IV.8, where ICT is embedded in the topic of methodology and media, notes that strong changes in teachers' and learners' activities in class are reported from many countries. Control of teachers on activities of students is diminishing. Students rely on outside sources or on information from their peers.

Some of these observations originate from the increasing role of the didactic component ‘media’ in class in general. Compared to classical media like blackboard and chalk or the OHP, modern information technology based media, like multimedia computers, have a stronger touch of educational intelligence. They can furnish students with information as well as with some advice for learning and about the correctness of findings. In addition, communication technology like networks can open up the classroom for geographically and – this is more important – culturally distant information, giving rise to activities like ‘distance learning’ in a virtual classroom.

Different reactions can be expected in different traditions.

Another general aspect in many societies, related to McLuhan’s assumption “the medium is the message”, plays its role in the context of ICT and math education as well: these societies have seen a ‘metacognitive shift’
going on at all levels of information and communication processes. There is
less interest in the content of these processes and growing interest in the
medium carrying the content.

Which different ways – if any – can uphold the intentions of mathematics
education as far as content and methods are concerned?

The statements made so far refer mostly to developments that are not
restricted to mathematics education alone. They give an idea, however, that
ICT will and must have really fundamental influences on the structure and
scope of this education, through changes in roles, artificially intelligent
media and virtual classrooms.

Other potentialities from ICT more directly and concretely support
traditional as well as new methods in mathematics education, which will
allow deeper understanding of mathematical content and applications.
Examples are visualisation of functions e.g. through powerful computer
graphics, dynamic tools in synthetic geometry, numerical experiments. New
mathematical content arises from ICT and, of course, teaching and learning
tools like CBT – computer based training. These potentialities mean an
extreme challenge to the content, methodology and intentions of mathe-
matics education. They also bring a new quality in accessible applications
and in problem solving.

Surprisingly to the members of the International Programme Committee
there were not too many papers submitted referring to the aspect of
technology or media in mathematics education. This is really surprising,
since on one side there is much research going on about existing tools from
ICT, the actual use of these tools, findings on their effectiveness and
pedagogical and educational issues from the use of ICT. On the other hand,
possibly not much attention has been given so far to the question of different
reactions to the tools in different educational traditions. This may be due to
the fact that – in the beginning at least – they were developed in the Western
world and introduced without adaptation in East Asian schools.

Several papers were submitted from the field of intercultural distance
learning in mathematics with classrooms in Australia, China, Germany and
Japan engaged in pairs. This is a rather special field of ICT application in
mathematics education, but a rather interesting and informative one as well.
The reason is that distance learning covers and touches many of the aspects
of the role of ICT in mathematics education mentioned above. Immediate
influences on content and methods become visible. At the same time
distance learning experiments promote rich experiences with intentions of
general education within mathematics education, including examples of its
openness to a variety of applications and methods of problem solving from
different cultural traditions. Last but not least the papers turned out to be a
rich source of information on different content and methods on the same