Learning; teaching; the processes of inquiry, synthesis, and communication of
corcepts and understanding -- all of these areas are being significantly affected by
the changing society in which we live. One of the characteristics of this society is
the rapid growth of information and information technologies. The purpose of
Stream 4 is not to discuss these new technologies in themselves -- many other
specialist conferences have this purpose -- but instead to highlight significant
research, predominantly European, relating to the nature of the learning
experience in learning and social environments in which new technologies play a
part. The research reported in Stream 4 covers a broad spectrum of perspectives
relating to learning environments in which interactive, computer-related
technology is a component. These perspectives range from empirical
investigations of the implications of design decisions in electronic educational
instrumentations for different groups of learners in different types of learning
settings, to theoretical considerations of new paradigms for the organization of
education and learning emerging in a so-called "Information Age". Particular
attention is given to research methodologies appropriate to current learning
situations involving computer-related technology, and to the new paradigms for
teaching and learning which may be also emerging.

The keynote speech for Theme 4 is actually two interrelated speeches, presenting
different perspectives on the roles of media and human actors when multimedia
courseware is used in a variety of learning contexts. Prof. Robert Lewis and drs.
Jan Schoenmaker amplify different approaches to the research process in this type
of complex human-and-resource setting.

The remainder of Theme 4 is organized in symposia, groups of interrelated
papers, a poster session and a closing session. The two symposia both focus on
the challenge of implementing adequate and effective research methodologies for
studying the impact of technology-enriched school environments over extended
periods of time. The first of the symposia presents a comparison of methodologies
for such research as have been conceptualized and implemented in a number of
different European countries; the second symposium examines in more detail the
methodologies and results from one such project, in The Netherlands.

The remainder of the papers in Theme 4 are grouped in 15 clusters, each cluster
relating to an aspect of the overall Theme. Some of the clusters relate to research
focussed more specifically on new educational instrumentation itself, as in the
subthemes relating to "Computer Simulations: Perspectives and Applications,"
"Research on Interactive Video," "New Developments in Electronic Learning
Resources," and "Educational Software Evaluation." Other clusters are more
focussed on research relating to the impact of new technologies in particular
learning contexts, such as in relation to curriculum areas ("Applications of
Information Technology in Science" and "Second Language Learning and
Technology") or in different learning settings ("Technology and Classroom
Processes," "Computer Implementation Perspectives", "Perspectives on
Technology in the School"). Other clusters relate to more specific aspects of
computer-related educational technology in learning and the organization and
interpretation of information ("Strategies for Information Handling, Retrieval, and
Organization", "Applications of Decision Support Systems"); to research relating to
the educational implications of telecommunications ("Organizing
Telecommunications for Learning"); and to overviews of research from different
national and international perspectives ("International Perspectives on Information
Technology in Education.") Finally, research related to more general issues
regarding the impact of technology in learning are the focus of the clusters
"Perspectives on Effectiveness and Impact of Educational Media" and "Learning in
a Technological Context."

Thus, Theme 4 deals with research from many perspectives -- methodological
issues, conceptual frameworks, case studies of naturalistic settings, action
research, instrumentation - focussed and implementation - focused -- but sharing
as a common feature the disciplined examination of learning in technology-
augmented settings.