Designing learning supportive infrastructures for e-learning requires a theoretical framework that reaches beyond the introduction of new technical functions to specific learning domains. It will be argued that essential failures in e-learning are quite likely to occur if the technical systems are basically regarded as digital versions of analogue inscription technologies because these create a one-way road of media use.

Learning processes may be regarded as continuous processes, but the respective activities are spread over different locations at different times. In addition, learning is not a purely individual receptive process based on some input but rather a complex interaction between people where media elements are researched, evaluated, exchanged and modified in multiple ways. In order to support these processes in innovative ways, the design of digital media must go beyond the analogue inscription processes such as writing, printing, recording etc., because inscriptions fix symbols on the carrying material in such a way that with technical means one can only manipulate the carrier by way of applying mechanical or chemical processes. The symbols as such can be perceived as objects but cannot be manipulated. Cognition and action space are separated by media discontinuities.

An ecological perspective is needed: the frame of reference is not the learning process but the environment in which learning takes place. The conceptual framework Medi@rena thus shifts the focus from consecutive processes of writing, transmitting and reading to a (virtual) learning space where people can individually inter-act with the system and collaboratively co-act through the system. Within this framework, essential technical qualities of digital media design are identified which allow us to provide the means for flexibly orchestrating different learning scenarios, and embody a stage for performing learning and teaching processes without prescribing the actual didactic concepts and methods to be used.

The idea of coupling cognition and action space more tightly by removing media discontinuities serves as a general guideline for deriving design hypotheses for the creation of ecologically sound learning environments. New innovative concepts for co-active visual structuring of knowledge such as responsive positioning provide new opportunities that help us to explore the potentials of digital media for learning as well as for teaching. The concept of co-active learning comprises a multitude of different teaching and learning scenarios such as supporting mentoring activities, collaborative writing processes or structuring of discourses.

Thus, a virtual learning space can be regarded as a Medi@rena, i. e. a space in which the manipulation of objects can be interactively and co-actively combined with responsive functions of the system. In other words, a Medi@rena embodies a kind of a stage or arena to perform different teaching and learning methods by providing a shared cognition and action space among the various groups and people involved.
**Selected References:**


