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experience based activities (Jonassen, 1991). The important application of the constructivist view of learning is the provision of instruction in relevant contexts. Learning should occur most effectively in context. The context becomes an important part of the knowledge base associated with that learning. Brown, Collins and Duguid (1989) stressed the distinction between authentic and school activities. When authentic activities are transferred to the classroom, the context is changed and the tasks become classroom tasks instead of real tasks. As a result, they state, conceptual and problem-solving knowledge acquired in school remains largely un-integrated or inert for many students. Learning should be adjusted to the situation in which it takes place. Instruction should provide for a relevant context. The contributions of the symposium elaborate on the changes in instructional design theories and how the changes influenced the actual design of instruction. The results of the research addresses the effects of the instructive environments, both retention and transfer.

THE INSTRUCTIONAL DESIGN, STUDENT ACTIVITY, DISCOVERY LEARNING AND TEACHING TO SOLVE PROBLEMS

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Summary
Recently traditional instructional-design theories and models, which are developed from behavioral learning theories and from general educational problem-solving models, are criticized. The traditional theories and models were too analytic and unable to teach integrated wholes. The analysis of the subject matter or the target behavior of the students usually resulted in different outcomes of instruction such as facts, concepts and principles. For each of these categories a further analysis was made and the components of the outcomes were reformulated such as attributes and relations. The results of the analysis were used to design and sequence the instructive frames. The emphasis was on the presentation of information or external conditions for learning rather than on what the student should do. Therefore, traditional or first generation instructional design was only seen as a tutorial approach which supposed the students to be passive and which was insufficient to design the teaching of problem-solving activities. This paper will try to link the knowledge of human problem solving with recent developments in instructional design. It will address the issue of the analysis of the target objective, how detailed this should be done and how the resulting components can be used to formulate questions and problems which stimulate the student's activity, enhance the formation of cognitive networks or schemata and in some situations lead to discovery of problem-solving procedures. The tutorial approach will be compared with an experiential approach that for different types of content can realize continuous transactions with subject matter. Attention will be paid to understanding and applying knowledge in solving complex problems.