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## Cooperative Learning in Web-Based Learning Environments

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### Problem context and research topic

The information and knowledge society is ubiquitous and requires new ways of dealing with information, communication, and cooperation. In the context of vocational education, new ICT technologies offer various opportunities for learning as they allow discourses which are independent of time and place as well as they provide learners with additional capabilities concerning interaction, feedback and support mechanisms. Since no didactic innovation is inherent with the usage of new media for educational purposes itself, it is essential to design didactical well-grounded learning environments to develop professional action competence in vocational education. If the learning process is seen as an active process of construction of knowledge, the role of new media as a content transportation tool is changing. A fundamentally different use of new media is characterized with the keywords “Web 2.0” and “Social Software”. The transfer of content is no longer the main objective, whereas cooperative development and the exchange of knowledge becomes important. Change is primarily not identified as a technological based change. Or in other words, it is fundamentally and technology independent, and thus is rather a didactical paradigm shift which can be supported by new ICT’s. This shift can be characterized on three levels: from passive content transfer to active competence development, from behavioristic to constructivist learning theory, and from instruction to construction of knowledge. Didactic design parameters based on the constructivist learning paradigm offer a solution to the problem of inert knowledge as they particularly focus on the problem-based situation and the orientation at genuine problem definitions as well as on situated cognition and the cooperation between learners. Situated cognition is not regarded as a new learning theory but as a theory realizing the described demands to the design of the learning context and learning environment. In this research project, new media serve as individual construction tools in cooperative learning environments in vocational education.

### Research questions and methods applied

A literature review and experiences in the development of the didactical environments in the research project lead to the following research questions, which will be processed theoretically and examined empirically in case studies more detailed.

*How can cooperative learning in vocational education be designed using web-based construction tools?*

Three case studies are conducted and examined in the context of the design experiment “KooL” (cooperative learning in web-based learning environments in vocational education.) Questions that arise in the context of these case studies are:

*How can new media support learning processes in vocational education? Which changes of the studying culture comes along with that? Which requirements are made to the problem definition and to the learning environments to initiate desired learning processes with the help of these technologies? How can new media serve as a learning impulse? How can new media be used as a knowledge construction tool? How can new media help to develop and present a learning product?*

The design based research project “KooL” is part of the BLK (Bund-Länder-Kommission) research program SKOLA (self directed and cooperative learning in vocational education). In the research project “KooL”, cooperative web-based learning environments, which allow learning as characterized by the didactical paradigm shift in vocational education are developed, implemented and evaluated.

A responsive research approach is used in the research project. This approach finds its expression in the responsive evaluation, the science and practice communication approach and in the design based research approach (cf. SLOANE, 2006). Taking the complex research field and the problem context into account, with the help of a differentiated approach and research methods expected outcomes are generated. A questionnaire examining the learning behaviour in cooperative learning environments with the main emphases on cooperation and new media is used in all case studies and a qualitative evaluation by interviewing groups of learners is also used. Furthermore projective questions are used as a qualitative evaluation method in single case studies to get access to the successful usage of new media as a construction tool for specific learning processes.

### **Expected outcomes**

Prototypes of learning environments will be identified in the three case studies. Aspects concerning the design, implementation and evaluation of didactical concepts for vocational education with innovative web-based construction tools will be derived. Single case studies which require a detailed description and analysis of the conditions of the respective web-based learning environment will provide insights concerning the reception and the design of web-based learning processes and the learning behaviour in vocational education and thus help other persons to efficiently use new media as construction tools in vocational education to develop professional action competence.