Contextual Teaching with Learning Fields in Vocational IT Education – How to Find Practical Contexts

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Abstract

Vocational IT education in Germany is characterised by cooperation between part time vocational school and vocational training company, called “Duale Berufsausbildung” (dual vocational education and training). During vocational education and training students attend school for one or two weeks, followed by two up to four weeks of training on the job. During this time students are apprentices and employees of their training company.
To combine theory and practice, the curricula in the field of computer science (CS) and information and communication technologies (IT) are arranged in so-called “learning fields” (“Lernfelder”), which are supposed to be put into practice by using learning situations. A learning field contains didactically reflected working and business processes. It describes several competencies the students should gain, but do not include specific skills to be acquired. A learning situation contains one single working process, which has been didactically reduced for the respective aim. Each learning situation should allow contextual learning by using activity-oriented teaching methods.
Unfortunately teachers are not putting this idea into practice. One reason for their non-adoption is a lack of appropriate teaching material and guidelines which would support them. So our project aims to develop exemplary learning situations and helpful tools for different learning fields to support the teachers in creating suitable learning situations on their own.
To explore typical working processes and a working environment in the field of IT and CS, we conducted semi-structured guideline interviews with selected training companies, which covered a wide range of occupational aspects. All interviews were evaluated by using methods of content analysis. The results were very diverse.
Companies with only one or two apprentices reported that their apprentices would be trained by working on the job. In contrast, companies with more apprentices used detailed timetables specifying the training content and at which departments the apprentices would work. So these companies take much care which competencies would be gained by the apprentices.
The most interesting findings were the related working processes. The trainers reported about interdisciplinary projects and working processes which would include several business processes as well. The company expected that their apprentices understood the underlying workflow and could communicate appropriately with colleagues and customers. The trainers criticised that documenting work and creating manuals was scarcely part of the lessons at school. So each learning situation should contain these topics. Another expectation named by the trainers was less teacher-oriented instruction and more open teaching methods at school, which could be easily met by putting the concept of learning fields into practice.
This study provided us with a lot of ideas for the development of new learning situations. So the next steps will be to develop and evaluate some exemplary learning situations, using the ideas given.

Keywords
Vocational IT Education, Computer Science Education, Learning Fields, Learning Situations, Empirical Study, Interview Study, IT Company Training, CS Company Training

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Biography

Simone Opel studied Information Technology at the University of Applied Sciences of Nuremberg and Vocational Education for Electrical Engineering and Computer Science at the University of Erlangen-Nuremberg. She worked as trainer for computer science and teacher at several vocational schools. Since 2010 she works as scientist in the “Didactics of Informatics” groups at the Universities of Erlangen-Nuremberg (until Oct. 2012) and Duisburg-Essen (since Nov. 2012).

Torsten Brinda has been a researcher in Didactics of Informatics at the Universities of Dortmund and Siegen since 1998. From 2005 to 2012 he worked as a full professor for Didactics of Informatics at the University of Erlangen-Nuremberg. In 2012 he became an associate professor for Didactics of Informatics at the University of Duisburg-Essen. He is the chairman of IFIP WG 3.2 "Informatics and ICT in Higher Education" and a member of IFIP WG 3.1 (secondary education).